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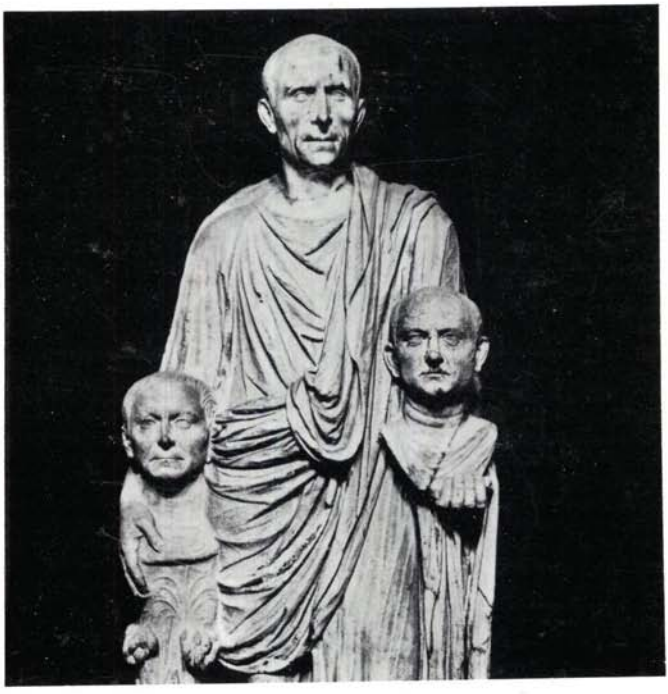

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Cover Picture: First Century B.C. Roman holding ancestral busts.
(See article: *Classical Busts, Hermae and Statues as a Source of Anthropological Data*)

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THE ISLAND OF REIL AND THE ROOTS OF LANGUAGE

F.J. IRSIGLER
South African Association for the Advancement of Science

The author explores the evolutionary development of the brain in relation to its capacity for language.

The island of Reil (Insula Reilii) arises as a shallow trough or depression on the dorso-lateral surface of the cerebal hemispheres, halfway between the frontal pole, marked by the olfactory bulb, and the occipital pole in the second half of the second and the first half of the third month of pregnancy (Kahle, 1969). It emerges in spatio-temporal contiguity with the olfactory palaeocortex or "Allocortex primitivus" (Stephan, 1975). The latter is represented in the macrosmatics (possessing an especially rich innervation of nose and mouth) by the piriform lobe which, in the African elephant, remains visible from outside being sharply separated from the mammalian neocortex of the brain mantle or pallium by the rhinal or collateral fissure whose anterior and posterior branches meet where the sylvian (lateral) fissure takes its origin to run caudally-dorsally (Janssen and Stephan, 1956). See Fig. 1.

Due to hemispheric rotation (to be discussed presently) the two branches of the rhinal fissure become, in the ascending primates, sharply angular or "kinked" ("Rhinalisknick" of Stephan), to form in between them the phylogenetic homologue of the trough in the hemisphere, called "vallecula lateralis cerebri". It gradually gets infolded or sunk-in to form the sylvian fossa whereas the wedged-in parts, now called "insula" become opercularized by the adjacent expanding neocortical pallium. In the human, the lateral fossa remains open into the second half of fetal life but closes up at full term so that the insula, by now occupying the floor of the lateral fossa, in the mature newborn is invisible from outside.

A-1. Background: Morphogenesis

Here follows a synopsis of morphogenesis of the insula. The rotation or "kink" around the sylvian pivot (C. Jacob, 1911) involves both the sagittal and the coronal planes, resulting in (a) a definite anatomical disposition of the reptilian (and limbic) allo-, periallocortex on the base, with the neomammalian or

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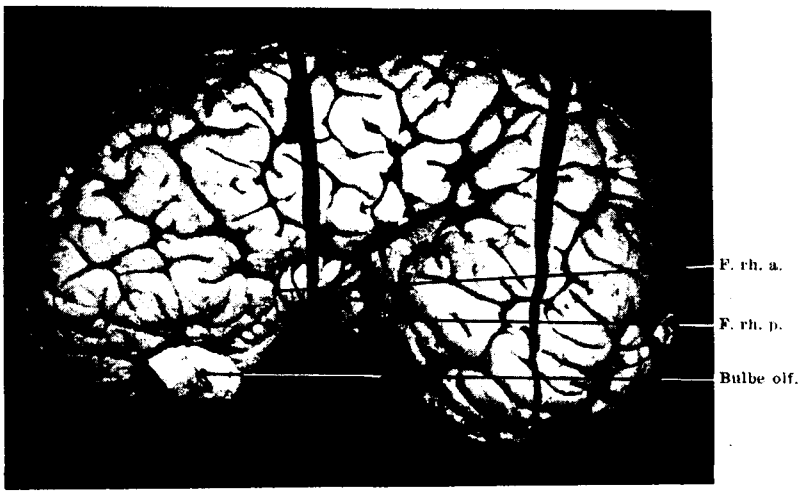

Fig. 1: Lateral view of the left hemisphere of the brain of the African elephant.
Bulbe olf., olfactory bulb.
F.rh.a. (p.), anterior (posterior) branch of the rhinal fissure, between the two wedged-in the piriform lobe (primitive allocortex). Note the "kink" between the two branches ("Rhinalisknick"). X point of departure of sylvian fissure running caudally-dorsally. (From: P. Janssen and H. Stephan, 1956, Acta Neurol. et Psych. Belgica 11, see References. By kind permission from Dr. H. Stephan, Max Planck-Institut für Hirnforschung, Frankfurt am Main).

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pallial cortex occupying the convexity. There are intermediary or transitional belt zones called, since M. Rose (1927), "insular mesocortex"; (b) in an allo-isocortical "interface" of cortical types possessing different prospective potentials on the ontogenetic and phylogenetic scales, each differentiating according to its own proper tempo and mode. Within the zone of transition the layers are intimately indented (Braak, 1980). Anatomically the transition coincides roughly with the rhinal or collateral fissure of the base of the temporal lobe. Yet, in a sense, the "interface" extends much wider, since each lobe is contiguous with an insular or limbic (palaeomammalian) boundary region, called "parinsular and paralimbic territories" (Sanides, 1975).

Cytoarchitectonics and myeloarchitectonics of the whole cortex, including the insula, advance through vertebrate evolution at different rates, meaning heterochrony. The olfactory palaeocortex and the palaeocortical insular pole (limen or apex) are the earliest to start differentiating in the second fetal mouth, followed by the striatum anlage which, in turn, is followed by regular structuring of the insular mesocortex merging gradually into the proisocortical (dorso-lateral) territories of the insula: this is the ventro-dorsal gradient of differentiation worked out by Brockhaus in 1940 (Fig. 2).

It follows that the insula as a whole should morphogenetically be considered as belonging to the palaeocortex and the striatal complex rather than to the neopallium (Kappers, 1909). The differentiation of the two types, while following a regular sequence in time, is independent of each other.

There is also heterochrony with regard to the pace and mode of specialization of the two hemispheres since differential rotation results in a morphogenetic lateralization not only of the neopallium but involving phylogenetically older cortices including the insula. Further details will be discussed in the next section.

A-2. Anthropogenesis

Flechsig's myelogenetic maps (1896-1920) show the palaeoinsula among those regions the latest to reach ontogenetic maturity. It shares this feature with the so-called "association areas" of the neomammalina cortex considered responsible for the "higher cortical functions in man" (Luria, 1966), see Fig. 3.

In actual fact, those areas approach the most the general

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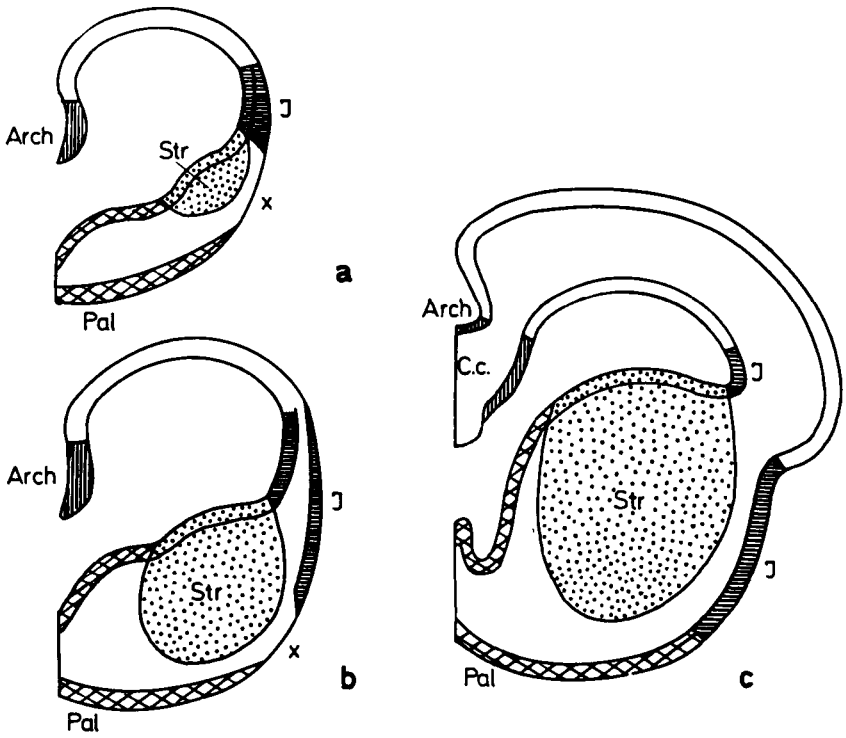

Fig. 2. Space-time association between Palaeocortex (Pal), Striatum (Str) and insula (J). Schematic drawing.
a second, b third, c fourth fetal month.
Arch, archicortex on the medial aspect of the hemisphere. Note that due to the developing corpus callosum (C.c.) and "infolding" of the striatum the insula, while remaining adjacent to the palaeocortex on the basal surface (x), the ancient, depressed or infolded insular cortex loses direct contact with the palaeocortex through interposition of the striatum anlage. (From: W. Kahle, Die Entwicklung der menschlichen Grosshirnhemisphäre, Berlin, 1969, p. 94. By kind permission from Springer — Verlag Berlin-Heidelberg-New York).

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cyto- and myeloarchitectonic scheme of Brodmann (1909) and the Vogts (1919), a typical feature of primates bound to become the most predominant structure "with the widest scope for further differentiation" (Sanides, 1975). With this the insula becomes an integral part of the anthropogenetic cortex at the base of the temporal and frontal lobes (Spatz, 1937), later called "Spatz' basale Rinde".

The concept is supported by clinical, physiological and experimental evidence. In a cortical map produced in 1907 by G.E. Smith the insula is divided by the central sulcus into an area prae- and postcentralis both of which abut on a small triangular area called "pyriform pars insularis" and continuous with the piriform lobe as mentioned above, see Fig. 4. The "rhinalis kink" between its anterior and posterior parts is clearly shown, and so is the "area temporalis polaris".

Smith unites the basal parts of the frontal lobe with adjacent ones of the insula and the entorhinal region; the latter is variously called "gyrus parahippocampalis" (Jakob, 1979) or "fusiform-hippocampal gyrus" (Papez, 1929; Geschwind, 1965).

Spatz' "Basale Rinde" which he soon associated with the "core of being human" (Kern des Menscheins) includes the fronto-orbital cortex and the adjacent ventral or olfactory insula (Fig. 5). The link with anthropogenesis was derived originally from cases of presenile systemic cortical atrophy and certain forms of gunshot wounds of the brain. These forms of atrophy are now called after their first describers "Pick's and Alzheimer's Dementia". They are characterized by a gradual but unrelenting loss of the human character and personality. Alzheimer's disease is now known as the fourth chief cause of death in the United States (*Scientific American*, October 1984, p. 48, and January 1985, p. 48). H. Jakob collected and described in detail some 50 cases of Pick's disease in 1979. The earliest and deepest involved territories are the avenues ("Eingangspforten") and pathways linking the olfactory and limbic cortices, that is, phylogenetic early regions including the ventral allocortical insula (Jakob, 1979, pp. 50-52).

Fig. 5 shows Jakob's fundamental pattern of cortical involvement. These regions coincide roughly with what Kaada (1960) later described as the "cingulate, post-orbital, anterior insular and temporal pole cortex", and Livingston and Escobar (1971) as "the basolateral circuit".

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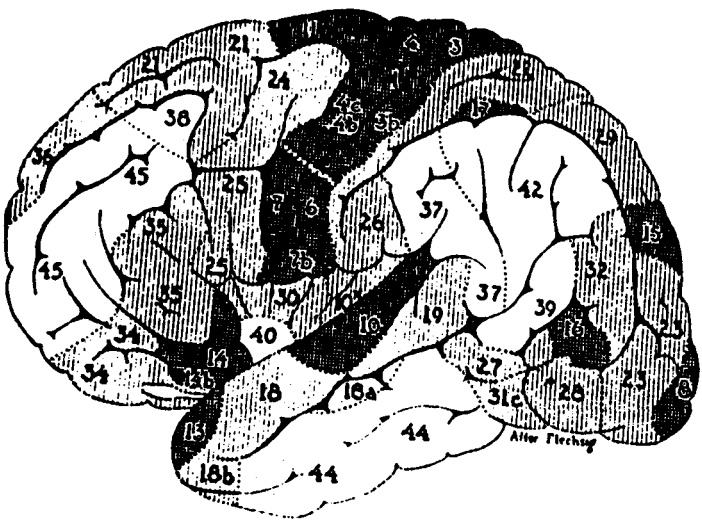

Fig. 3: Flechsig's myelogenetic map of the cerebral cortex (1920). The numbers indicate the time sequence of completion of myelogenesis in the respective areas.
cross-hatched – so-called "Primordial areas", myelinized at birth; lined-intermediate, incl. dorsolateral insula (30) and long gyrus (10^{x}); plain-associated areas (terminal): 38,45 frontal; 37,42 parietal, 39,44 occipito-temporal. Note that the palaeocortical (ventral or anterior) insula, numbered "40", ranges among the latest to reach myelogenetic maturity, like the associated areas. (From: Handatlas des Menschen von W. Spalteholz, 3. Band, 14. Auflage, S. Hirzel, Leipzig, 1940, p. 777. – Also reproduced in Bailey, P. and G. von Bonin, The Isocortex of Man, 1951, p. 7).

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Experimental evidence is no less unequivocal. P.D. MacLean (1978) states of the monkeys in which the major pathways to and from the reptilian type and paleoomammalian type brain and destroyed that "though they look like monkeys, they no longer behave like monkeys".

MacLean regards those structures and their links as subserving species-typical, simian and human behavior providing, in man, what he calls "the avenues to the basic personality". His reptilian type brain or "reptilian driver" includes the olfactostriatum, the pallidum, and satellite gray matter. Since it can be selectively stained for cholinesterase in animals ranging from reptiles to man, MacLean gave the whole complex the name "R-complex".

As to the striatal complex whose early morphogenetic association with the palaeoinsula is shown in Figure 2, MacLean (1972) calls it "a neural repository for genetically constituted forms of behavior" whose lesions may interfere with the innate display behavior.

The "infolding" of the striatal complex, intimately related in time and space to the depression of the palaeoinsula, is a very early formative process, well known in Sphenodon and Ornithorhynchus (L.H. Hyman, 1962). It has its analogue on the medial aspect of the hemispheres, in the "Einfaltung" (Gegenbaur, 1898) of the hippocampus formation in the platypus, a monotreme from Australia. These formative processes, deeply rooted, as they are, in the phylogeny of the vertebrate brain, and called "spontaneous and autonomous" (Monod, 1970) must be taken into account in order to understand the key role of the "basal cortex" and its links as the structural correlates of the species-characteristic behavior patterns in man and animal.

Summary of Section A

1) The insula is the prototype of a cortex developing in stages intermediate between the piriform palaeocortex and the eulaminate neomammalian cortex.

2) There is distinct parcellation of the insular cortex, *first* between the orbito-ventral, allocortical part and the dorsolateral areas (the so-called "i-Felder" of Brockhaus, Rose and the Vogts), and *second* between the gyri breves and the long gyrus, separated by the central sulcus.

3) Differential lamination starts at the beginning of the third

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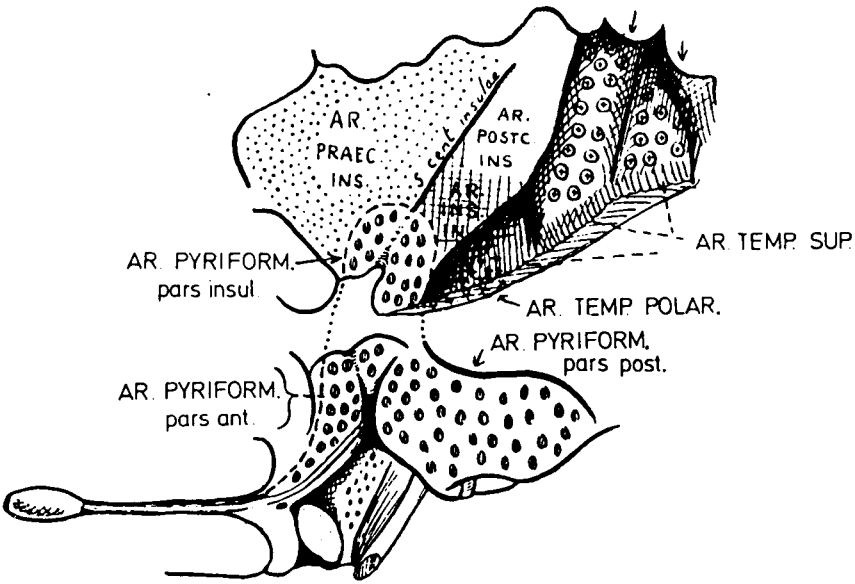

Fig. 4: Parcellation of the left insulo-piriform complex according to G.E. Smith's cortical map of 1907. From H. Braak, Architectonics of the Human Telencephalic Cortex (1980), p. 107. (By kind permission from Springer-Verlag, Berlin-Heidelberg-New York).

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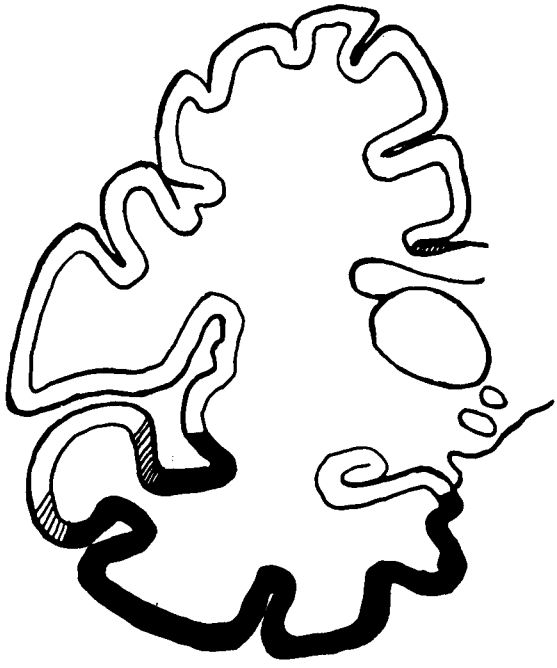

Fig. 5: Schematic drawing of a coronal section though the right hemisphere at the level of the hippocampus H. To show the sites of predilection of cortical atrophy in Pick's Dementia.
Black: severe atrophy of the whole of the basal cortex ("Basale Rinde" of Spatz) and the mesocortex of the lower (olfactory) insula Ii.
Hatched: mild atrophy of superficial cortical layers.
Hippocampus H is spared.
(From: Jakob, H. "Die Picksche Krankheit", Berlin, 1979, p. 31. By kind permission from Dr. H. Jakob, Wiesloch, and Springer Verlag, Berlin).

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fetal month in the allocortical limen or "pole", and precedes that of the dorso-lateral proisocortex.

4) The development of the insula is intimately linked with that of the striato-pallidal complex, and with the hemispheric rotation starting in the second half of the second month of pregnancy.

5) Delayed, that is post-natal, myelogenesis, shared with the "association cortices" of Flechsig, puts the allocortical insula within the realm of Spatz' 'Basal Cortex", instrumental during anthropogenesis.

SECTION B

The Affective-Cognitive Preconscious Domain
("Inconscient affectif et inconscient cognitif", Piaget 1970)

Toulmin is right – in his dispute with Chomsky – that human language has an evolutionary history insofar as it comprises many capacities that are discernible at a prelinguistic stage.

H. Hörmann, 1981

B-1. The Morphogenetic (Chemoaffin) Interface

Morphogenesis, as understood in this paper, is concerned with those brain states and brain processes mediated through intercellular communication and taking place at the interface of spatio-temporal contact between layers of different evolutionary levels possessing different prospective potentialities. These processes bear a striking similarity to the constructive and distructive interference pattern of waves familiar to modern quantum physics and held responsible for the fact that in microphysical events one cannot predict exactly what will happen next (R. Feynman). The concept of interface invokes the neurochemical apparatus of the brain and its architectonics. What is transmitted at the interface is information in a distributed form resisting disruption. A mathematical analogue has been developed by D. Gabor in 1948 who envisaged that wave packets generated by energies and reaching a recording surface intersect and produce nodes of reinforcement and interference. The idea was soon realized by different methods of holography. In 1966 K. Pribram suggested that encoding brain processes, among them those monitoring the "world within", follow the

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holographic principle of distributed information. (Pribram 1967, 1970, 1979).

In some way, the idea of morphogenetic intercellular communication goes back to the end of the last century. Originally, it was seen as an effect simply "spreading out in space" from higher differentiated cells to those of lesser differentiation contiguous with each other in space and time (W. Roux 1888). It is now known that the transmission of information at such sites is through release of specific transmitters, vesicles and enzymes, called "chemoaffinity" (W.R. Sperry 1963). The transmitters may accumulate in the target cells to such extent that the latter can be delineated by selective coloring. Thus, the greater part of the "reptilian (R-)complex" including the pallido-striatum and its satellite gray matter can be identified by a stain for cholinesterase (P.D. MacLean 1972).

It is here, at the early formative levels of development, that the concept of chemoaffin interference becomes paramount from the point of view of phylogeny, that is, of "formes" in the widest sense of biological "formes" meaning diversity and constancy of taxonomic types. In man and the higher primates the phylogenetic earlier, allo- and periallocortical territories occupy the base of the temporal and frontal lobes, being responsible with their pathways and interconnections for species-typical behavior. Furthermore, throughout mammalian evolution structural contact is maintained with the mammalian neocortex so that each lobe remains contiguous with both an archicortical belt on the one side and with a mesocortical boundary region on the other (Sanides 1975).

Finally, the concept of the morphogenetic interface is akin to that of formative induction in embryogenesis as established experimentally, in the line initiated by W. Roux, by H. Spemann. At the close of his classic monograph of 1936 Spemann remarks aptly that those developmental processes reveal, in the kind of their concatenation, "the greatest similarity with the vital processes we know of most intimately: the psychic phenomena." Here we tread upon a very modern and controversial ground, the mind-brain interaction problem or, in modern terms, the so-called "liaison brain", upheld by two authorities of international repute, Karl R. Popper and John C. Eccles, in their monograph "The Self and Its Brain" 1977, corrected 2nd printing 1985). They agree that unconscious mental states and processes could well be indentified with brain states and brain processes in the sense that animal conscious experiences are a

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"spinoff" from brain action.

On the other hand, J. Piaget (1971), leader of the Geneva school of developmental psychology, stresses "the rather striking parallel between the problems raised by organic embrogenesis and the kind of mental embryology which constitutes the development of individual intelligence".

Attemps to represent reality without attempting to transfrom it as in imagery, perception and memory, are called by Piaget's school "schemata". They display, according to this view, a sequential character of stages linked up with the development of cognitive functions, hence called "sensorimotor schemata" (1976); they are not the conscious content of thinking, but "*impose* one form of thinking rather than another. These forms depend on the subject's developmental level, which derives ultimately from early organic coordinations. In other words, the subject has " *no access* to the internal mechanisms that direct his thinking" (1976, p. 64).

According to this interpretation, there is a preconscious set of step-by-step transformations of the sensory input matching, in the words of G. Stent, "a program that preexists in the brain". There is an earlier version of this "fonctionnment intime et ignoré" of Piaget. In "Raison présente", 1970, Piaget attributes to the preconscious domain an even more fundamental role. Thinking being an unconscious activity of the mind "of which only the results become conscious", Piaget points out that this form of spontaneous and creative thinking, promiment as it is in the infant, characterizes equally well scientific thought and, a fortiori, the "natural way of adult's thinking."

Let us now turn attention to the phylogenetic roots of the apparatus structuring the "cognitive-affective unconscious" of the Geneva school.

B-2. The Reptilian Complex and Its Satellite Gray

This is man's and the higher primates' patrimony inherited from the mammal-like reptiles, the Theromorpha, more than 200 million years ago (see Section A). E. Brunswik (1955) refers to it as "the ratiomorphic models".

What is of particular interest in the present context is the finding that articulatory coordination and rhythmicity of speech are bound up with the gray matter that either surrounds or is adjacent to the ventral side of the aqueduct, rostrally end-

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ing at the floor of the third ventricle and caudally extending down to the level of the fourth ventricle (Lenneberg 1967, Bailey and Davis 1942). This crucial area in speech-sounding (barking in dogs, mewing in cats, etc.) is at the core of the midbrain territory associated with conscious phenomena and species-typical behavior including vocalization and facial movements and gestures; in other words: animal consciousness, as mentioned above. In an earlier paper R. Sperry (1964) has pointed out that emergence of consciousness is the most critical step in evolution; before it, he says, the whole drama was displayed "before empy benches." Let us try to exemplify the subhuman level of mentation, that is, Piaget's affective-cognitive "inconscient" in terms of the satellite gray by referring to Darwin's cattle he watched on a large ranch in Uruguay during a stormy night when the cattle all mingled together. But next morning, he relates, the tropillas separated as before; "so that each animal must know its fellows out of ten thousand others." A. Keith (1947) saw in this phenomenon the group spirit or group cohesion at work among social animals, controlled by "innate disposition or instinct and not by a taught or acquired tradition."

Peter B. Medawar (1976) sees the phenomenon from the other end of the scale. Explaining the "behavioral repertoire" not being at the mercy of biological inheritance he states: "our social conventions and institutions do inhibit and to some extent prevent the more exuberant formes of the behavior so often described as 'bestial' though in reality it is more characteristic of man than of beast". This is followed by a quotation from Alfred North Whitehead's Introduction to Mathematics which reads: "it is a profoundly erroneous truism, repeated by all copybooks and by eminent people when they are making speeches that we should cultivate the habit of thinking of what we are doing. The precise opposite is the case. Civilization advances by extending the number of operations which we can perform without thinking about them."

To sum up: The "satellite gray" is an integral part of the "R-complex" connecting meso- and diencephalon close to the midline lining the wall of the third ventricle and aqueduct. It is called, since the work by Moruzzi and Magoun (1949), the brain stem reticular formation or arousal and activating system. When damaged by injury or experiment loss of wakefulness (alertness) ensues in man and animal, and with it the species-

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typical behavioral repertoire. In man, the critical region has been extended more anteriorly to include the septum pellucidum, the hippocampus and the posterior orbital convolutions (W. Feldberg 1959).

We will now describe a basic feature of the satellite gray: its antagonistic nature (or dichotomy) and chemoaffin structuring manifesting itself in the fight/flight or aggression/submission alternative and other forms of rhythmicity and periodicity such as the alternative between sleep and wakefulness.

This antagonistic pattern is indeed ingrained in the vertebrate ancestry. There is in the lower vertebrates a fibre tract "basales Riechbündel of Edinger", in mammals now called "median forebrain bundle" or MFB for short (for details see the monograph by R. Diepen 1962). It links the olfactory palaeocortex and the orbito-frontal area with the midbrain (Stephan 1954). Being adrenergic it subserves the gratifying (rewarding) or dominant attitude. Its antagonist is the periventricular system (PVS) of Crosby and Woodburn (1940), known since 1891 as the "Schütz' bundle", connecting again the orbito-frontal allocortex and the temporal pole with the striato-pallidal complex and the hypothalamus. It is relayed, like the basolateral limbic circuit of Livingston and Escobar (Section A), in the thalamic nucleus dorsomedialis and subserves the aggressive behavior of the "underdog", unable to achieve a gratifying reward or recompense. Being cholinergic it is related to the olfacto-striatal complex present in animals from reptiles to man.

B-3. The Reptilian Categories of Relation

Under the onslaught of the positivist and associationist tenets, it has become common place to subsume the entire cerebral activity and especially the so-called higher cortical functions in man, under the heading of "associations", more specifically, of "cross-modal associations". According to N. Geschwind (1965), such associations are readily formed only in man "and it is this ability, the author continues, which underlies the learning of names of objects", the simplest aspect of language in Geschwind's view. Consequently, the responsive repertoir at the subhuman level becomes reduced to a mere "reinforcer" concerned with food, water, etc., called "limbic modality" (Geschwind 1965, p. 250).

However, the "ratiomorph" apparatus is much more than a mere reinforcer of modality. As we have seen, it represents

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the cognitive and emotional spheres of preconscious and prelinguistic mentation, i.o.w. that what R. Cattell (1972) calls "the emotional truth", defined as "the most appropriate emotional response for survival in a given species in relation to a given environmental situation." An instance is provided by the gestalt-like perception of immediate comprehension underlying so-called imprinting first described by P.H. Gray in 1958 and detailed by K. Lorenz and others. This is a highly specialized behavioral pattern limited to early periods in the individual's life and characterized by an increase in selectivity without participation of true conditioning and reinforcement. K. Lorenz (1967) has underlined its specificity and survival value "reacting to any object that answers to the own distress signal immediately after hatching."

Similar modes of interaction are involved in other types of cognitive-affective responses in social animals, such as infant-mother relationship, territorial instinct, and group cohesion or group identity, all of them in the service of individual and group survival. They derive ultimately from man's and animal's propensity for responding to classes or categories of stimuli possessing "physiognomic" similarity such as between the faces of the same person in his/her youth and in old age, or distorted by disease or a cartoon (Lenneberg).

B-3.1. Recognition: The Class Concept of Identity

Piaget calls recognition "a very early phenomenon", and the notion of identity "a preoperational notion" (1976, pp. 32, 96). In his "Reader in Development Psychology" (1976, p. 89 ff) he devotes a whole section to the notion of identity which according to him, is rooted in the functional unity of the exchanges between the child's own body and another human body.

The present context suggests extension of the identity notion from the ontogenetic and individual into the phylogenetic scale. This means translating it from the field of genetics into the language of species formation (speciation), that is, of behavior and physiology including perception. "Identity" then becomes synonymous with and equivalent to "belonging to the same social group or community" perceived as a common whole whose identity will continue in the service of group (not individual) survival. This kind of "perception" is obviously indepen-

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dent of the sense modality involved: olfactory, tactile, visual, or auditory, being directed by invariant behavioral imperatives.

Here we enter a field of research much debated at present in this country.(1) It deals with the multi-faceted concept of species and their formation; involved are not the genes "per se", that is, as isolated bricks in their diversity, but their recombination through the process of biparental fertilization.

In the forefront of this debate is H.E.W. Paterson's "Specific-Mate Recognition Concept" (1978, 1980, 1985).

The decisive factor in speciation, crucial in population biology, is not the possession of a definite aggregate of genes, shared by all members of a con-specific community, but the desire or urge of the potential parents to meet and to mate, and, in addition, to provide for the resulting young such care as they need for their survival (C.D. Darlington, 1964).

Here we return full circle to the nature of "animal consciousness" and the antagonistic polarization of the periaqueductal gray as just explained. At the same time "identity" becomes a qualitative invariant in a "coadapted signal-response reaction chain" (Paterson 1985) determining the sequential character of reproductive behavior. Its conditio sine qua non is efficient classification gained from experience accumulated by the entire ancestry of species and enabling man and animal to anticipate results and prepare action.

Thus, species identity and its dual, exclusion and repulsion of the "intruder" has become not only the hallmark of reproduction continuity, but also the source of the relational class concept "identity".

B-3-2. Ordering (Sequencing, "Seriation" Piaget 1973)

Like the identity notion, ordering or sequencing is a concept of relation, an expression of the law of "formes" pervading the entire biosphere from the DNA code upwards through the hormonally regulated metamorphosis of the caterpillar and embryogenesis up to "ordinatory" activity in man and animal, sequence or series in time and/or space.

"Ordinatory activity" (Piaget 1971, p. 165) as such does not transcend the scope of perception since it does not involve quantification, that is, it does not transcend classification or conceptualization. Piaget uses the term "ordinality".

(1) See "Species and Speciation" (E.S. Vrba, ed.), Transvaal Monograph No. 4, Pretoria 1985.

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The Geneva school of developmental psychology (1971) presupposes an order of succession discovered by the child through introducing some sort of reflective or reasoned reconstruction. Considering that the ontogenetic level is nested in phylogeny Piaget confirms that "the notion of order cannot possibly be found in experience".

Helmholtz assuming unconscious reasonings or "preinferences" which he attributed to perception, postulated that we could find order in the ordered succession of states of consciousness as in memory.

Again, we recall that articulation itself reflects a patterning in time, that is, a sequential arrangement of muscular contractions requiring preplanning with anticipation of later events. According to Lenneberg, this "may be adduced as a proof that sequencing on a neuromuscular level is not accomplished by an association mechanism."

Ordering is at the heart of any coding system, human as well as subhuman, called "syntax". The capacity to perceive and understand an ordered string of ultrasonic waves in whales and dolphins is correlated with the simplest cortical structure, and not with the highly differentiated temporal cortex in these animals (Zvorykin, 1963; Pilleri and Gihr, 1969).

It is this fact that makes human language a form or "thesis", not a substance. Phonologists of an earlier time refer to an underlying "infrastructure inconsciente". "Flair" and "frail" belong to differnet phonemic categories, therefore they mean different things.

This kind of structuring is closely related to the sequence of "events" in the nonlinguistic world, and it is crucial to the problems of language "universals" as shown long ago by Bertrand Russell. He defined "universals" as "the meaning (if any) of a relation-word."

Conclusion

The fundamental categories of behavior, including language behavior, are laid down according to a preestablished cognitive-affective structuring defined in the species' ancestry. This structuring includes as an integral part the orbito-frontal (ventral or anterior) palaeo-insula and its liaison with the anthropogenetic cortex of Spatz on the base of the temporal and frontal lobes. These basic categories are essentially antagonist-

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ic and relational in character. They include the identity (class) relation and the asymmetrical relation of ordering. Both are manifestations of the morphogenetic "interface" common to men and animals.

Loss of language's deep structure is in essence loss of the faculty of categorization, in the sense of a discoverable relation between the linear nature of language and the sequence of "events" in the nonlinguistic world.

SECTION C

Quantitative Morphogenesis: Results and Interpretation

In their work on the isocortex of man, Bailey and von Bonin (1951) have come to the conclusion that "the left insula is significantly longer than the right one. The greater length of the left Sylvian fissure appears as but another expression of the same fact".

Anatomical textbooks generally stress the triangular shape of the insula. According to Ranson and Clark (1959) the apex is known as the limen insulae and the remainder is subdivided by an oblique groove "sulcus centralis insulae" into a long gyrus and a more rostral portion, which is again subdivided into short "gyri breves". Braus-Elze (1932) call that part where the apex bends back to merge into the basal surface of the frontal lobe "limen insulae"; it belongs to the rhinencephalon. The short gyri running rostrally and ventrally converge to the limen. The authors draw attention to a considerable difference in disposition of sulci and gyri between the right and left insulae.

We consider a tripartite parcellation of the insula the most appropriate. It is based on morphogenetic and myelogenetic principles as set out in Section A.

Here follows our subdivision (see Figs. 1-3):

1) laterodorsal surface ("LAT" in the tables and graphs) occupied by the short gyri. This is the transitional insular mesocortex sensu strenuo;

2) gyrus longus (LG), the part of the laterodorsal surface lying caudally to the central sulcus and bordering on the circular sulcus;

3) the ventral or anterior surface ("V") of peripalaeo-(allo) cortical architectonic (see A-2). It is characterized by its delayed myelogenesis on the Flechsig scale and

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forms part of Spatz' "basal cortex" (ib.)It corresponds to Brodmann's area 51 and to the "ai-Felder" of the Vogts.

Originally, we have considered that portion of the fronto-orbital or ventral extension lying closely against the ventral insula and covered by the tip of the temporal pole, to be a separate and separable part ("ORB"). However, since it includes the limen or apex we regard it now as part of Brodmann's "insula ventralis" or "olfactoria" assuming this to be in agreement with Stephan's classical subdividion proposed in his comprehensive Allocortex monograph of 1975.

Our previous investigations have shown:

1) that cerebral lateralization is a morphogenetic, not a morphofunctional invariant of the vertebrate brain; it is not confined to man, and is to be correlated with differential rotation around the ancient "vallecula lateralis cerebri". It results in a differential tempo and mode of specialization of the developing hemispheres, that is, explicitly, the analytic approach through the "causal" or linear structure of symbolic language on the one hand, and the perceptuo-cognitive mode through "direct apprehension of shape" (Levy, Trevarthen and Sperry, 1972) on the other. The latter has also been called "holistic perception from parts or fragments" (Nebes, 1974) and "holistic-monistic interpretation of reality" (Sperry, 1983);

2) that the so-called "dominant" (left) hemisphere is, on the scale of neencephalisation, the one with the greater allocortical (basal) moiety compared to the "minor" (right) half;

3) that, confirming existing evidence (Wada and others, 1973) lateralization is present in infants under the age of three years, manifesting, at this "preoperational" stage, a definite precocity of the Nego (African) infant;

4) that the allo-periallocortical "interface" reveals intrinsic properties such as spontaneity, rhythmicity and staging. By virtue of its extension to the orbito-frontal, palaeoinsular and piriform cortices the interface acquires the status of an integrative cortex controlling species-typical behavior in man and animal.

Material and Method of our planimetric measurements have been dealt with in detail elsewhere (Irsigler, 1983; 1984a and b; 1985). Here will be given the results as analyzed by the Institute for Biostatistics, Transvaal Branch, of the South African Medi-

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cal Research Council and a Research Organisation, Chamber of Mines, both in Johannesburg. This will be followed by our interpretation in the light of the principle of morphogenetic interface.

We believe that in order to ascertain the rate and mode of brain processes active at this crucial contact surface, quantification by planimetry is indeed a useful tool. MacLean's (1973) experimental data confirm that at the pallidal (subcortical) level the size rather than locus is responsible for interpretation in terms of function. John A. Wada and coworkers (1975) as well as Geschwind and Levitsky (1968) have successfully made use of planimetric measurements in assessing hemispheric asymmetry and speech representation in humans.

In the case of the transitional cortex of the insula the question of R/L lateralization is rather more complex since we here deal with compartments of different maturation gradients. Therefore, asymmetry affects different parts and different population groups differently, that is:

first, it affects infants differently compared to adults;

second, it affects different portions of the insula in different degrees;

third, there is a strong tendency towards significant differences with respect to lateralization between sexes and ethnic (phyletic) stocks;

lastly, there is a sort of compensation between the partioned differences to the effect that R/L differences tend to be levelled out in the overall surface measurements in both infants and adults.

In a pilot study of 22 right and 21 left insulae, cut out at post mortem and hardened in 10% formalin (as previously described) the different portions (LAT, LG, V, ORB) were measured by our planigraphic method. The only, highly significant differnece turned out to be in the laterodorsal (LAT), and well in favor of the left side (Table 1).

It appears that it is the proisocortex of the laterodorsal which is responsible for the greater length of the L insula and of the L sylvian fissure as reported by Bailey and von Bonin. Their R/L difference, assuming a rectangular shape of the insula projected onto the sagittal plane, is 1.69cm^2 in favor of the L side; our triangulation method (with a conversion factor = 2.73) yields a R/L difference of 1.47, also favoring the L side. Expressed numerically as the quotient R/L the surface asymme-

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try is 1.085 with Baily and von Bonin, whereas triangulation in a random sample of 43 insulae yields R/L = 1.063.

It is to be noted that the preponderance of the L insular proisocortex (LAT), that is the preponderance of convexity over base contrasts with the allocortical preponderance of the L temporal lobe as previously established (see Irsigler, 1983, Table 1, and 1984, Table III); there the parameter Q = B/C (base over convexity) is greater compared to that of the "minor" side.

The Main Group

From 72 post mortem examinations the R and L insulae of each brain were collected, paired, and measured. A paired t-test was used and the test level was adapted by the number of comparisons, in this case, five, that is 0.05/5 = 0.01. Only statistically significant results are summarized in Table 2.

In the Main Group R/L differences are shown in the latero-dorsals and the long gyri, the first being significant at the level $p < 0.01$) the latter with a strong trend towards significance ($p < 0.05$). However, the crucial feature here is the opposite sign attached to the t-statistics. It means that there is a reversed relationship of laterality between LAT and LG; in the first, laterality is in favor of the "dominant" (left) side; in the long gyrus, laterality is reversed, that is, the R long gyrus tends to be the greater one. Thus, regarding baso-dorsal quantification a crossed relationship is revealed: the long gyrus of the "minor" side corresponding to the "dominant" temporal lobe, and conversely, the "minor" temporal lobe corresponding to the "dominant" side of the insula.

It is tempting to call this an "antagonism". No explanation can be offered at this stage.

Comparing males (n=31) and females (n=14) with infants (n=10) for the various compartments of the insula (Variables) and the Totals yields the results shown in Table 3. The groups were compared by means of the unpaired t-test.

The first thing to be noticed here is that there is no difference between the two age groups with respect to the dorso-lateral proisocortex. However, differences occur in LG, the palaeoinsula (V+ORB), and therefore in the Totals.

The comment by the Institute for Biostatistics reads as follows:

"Since three means are compared pairwise by means of

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the t-test, the test level = 0,05 should be adapted for each individual test to 0,05/3=0,0167 to keep the overall test level at 0,05. Any comparison with a p-value between 0,0167 and 0,05 indicates a strong trend towards significance."

It is interesting to note that with LG only on the R side a significant difference is found between adults of both sexes and infants. This seems to suggest that on the "minor" side the insula advances after infancy at a greater speed towards isocortical maturity.

By contrast, with regard to the palaeoinsula, there are significant differences in both the dominant and minor sides (with males in the latter only). The infants' Totals differ significantly on either side from the males' Totals.

Again, a tripartite subdivision of the insula is obvious: the palaeoinsula, the dorsolateral gyri breves, and the long gyrus as a sort of "antagonist" to the laterals as suggested in Table 2.

As an interesting side path in Table 4 is offered a comparison of the baso-dorsal (morphogenetic) Q-parameters (the Quotients Base/Convexity) in infants < 3 years to those of their respective adults.

Two qualifying factors are there to be reckoned with, First, the numbers of infants measured are small compared to that of adults; second, the black infants are in the mean six weeks older than the white ones. At this age, age obviously is a contributing factor rendering comparison a delicate matter. Nevertheless, we should venture the following suggestion. Precocity of the newborn and infant Negro, compared to the European infant of the same age group is well established since the work by Falade (1960) and Geber et Dean (1964) on African infants from Senegal and Uganda. With them, not only psycho-motor and perceptual and other aspects of bodily development are precocious compared to European infants, but also the acquisition of language. Negro precocity is most pronounced between 15 months and three years (Irsigler, 1983, p. 451).

With this in mind, one might interpret our Table 4 as suggesting that the Q parameters (taken as indicating the rate of neencephaliazation of the hemispheres) in the Negro infant approach considerably closer those of their adults than this is the case in the European infants. An environmental (socio-economic) factor may well be at work here, but a degree of genetic determination can hardly be excluded taking into

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account the other aspects of morphogenetic quantification.

Now for the Graphs

The insulae from 70 post mortem specimens were subjected to graphical analysis. A number of them was considered inadequate, parcellation being in some doubt. The graphs which follow refer to 114 insulae from 57 brains collected from 32 males, 15 females, and 10 infants aged three years or less. All four parameters (LAT, LG, V+ORB, TOT) were measured on the R and L sides. The measurements were normalized to the total mean and the deviation of group data from the mean displayed graphically.

In Graph 1A a reversed relationship LAT and LG is clearly shown in favor of LAT on the L, and in favor of LG on the R. Compare with statistical analysis of Table 2. Note increasing convergence to the palaeoinsula (ORB) and Total, the latter slightly favoring the L side.

The infantile group (Graph 1B) reveals again a tripartite insula with R/L deviations ($^{t}0.05$) converging towards the infantile mean being less than in the Grand Total of Graph 1A.

Comparing the two Graphs the following inferences may be drawn:

1) Laterality of the insular cortex in infants up to three years is definite in all three compartments, LG, ORB, and LAT (in that order), thus appears genetically determined and is consistent with R/L asymmetries found in infants who died at birth and in a 29-week-old fetus (Wada, Clarke and Hamm, 1973).

2) Laterality converges and levels off towards a total mean.

3) There is a reversed R/L relationship with respect to the Grand Total of Graph 1A. This may indicate a shift of the rate of maturation gradient occurring after infancy in the direction of neocortication, most pronounced in LG, and consistent with the "Differenzierungsrichtung" of the insular mesocortex established by Brockhaus in 1940 (see Section A-1).

Finally, we want to compare the infantile group (n=10) with that of adults (white males and females, n=26). The graphical display is shown in Graph 2.

Note here, too, sample sizes are small and will need the rigor of statistical analysis and confirmation.

Comparing Graph 2 with Graph 1, a reversed laterality between infants and adults is clearly indicated. In addition, the

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palaeoinsula (ORB) appears to lose in allocortical asymmetry, more so in the males. The long gyrus emerges again as "antagonist" to both the palaeoinsula and the proisocortex of the dorsolateral gyri breves, in the infants and the adults.

Both groups converge towards the total mean.

Final Summary

1) Cognitive-affective brain states and processes in higher animals and man, be they "conscious" or "unconscious", depend on the exchange of energy and information taking place at the interface and the boundary regions between structures of different prospective (phylogenetic) potentialities. This neuronal structuring is common to animals and man, it is genetically determined, and responsible for the species-typical behavior, including human language.

2) The maturation gradient of the insular cortex is consistent with Brockhaus' "Differenzierungsrichtung", that is, advancing from the allocortical limen or apex through the mesocortex to the dorsolateral proisocortex.

3) The palaeo-(ventro-orbital) insula is an integral part of the anthropogenetic and glossogenetic structuring emerging together with the striatum anlage early at the ontogenetic and phylogenetic scales, long before the neopallial cortex. Its late maturation on the Flechsig scale puts it into the realm of the late-myelinized "association" areas, representing, in the primates, the most generalized architectonic scheme of Brodmann and the Vogts.

4) Like in embryogenesis and metamorphosis the development occurs in stages, the preoperational stage in the prelinguistic infant being characterized by the notions of identity (the class concept of physiognomic similarity), and of ordering or sequencing in time and space, that is, expressed in linguistic terms, meaning and syntax, the first emerging before the second.

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INTELLIGENCE AND NATIONAL ACHIEVEMENT

Editor
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RELATION BETWEEN PERSONALITY VARIABLES AND THE COOPERSMITH SELF-ESTEEM INVENTORY

HENRY H. REITER and DEBORAH COSTANZO
C.W. Post College

A correlational study between the Coopersmith Self-Esteem Inventory (SEI) and the Guilford-Zimmerman Temperament Survey (GZTS) was done using a population of 28 male and female adults. The results revealed that high scores on the SEI were significantly correlated with high scores on the ascendancy factor of the GZTS. In addition, high scores on the Emotional Stability and Objectivity scales also correlated significantly with high scores on the SEI. The lowest correlations found involved the personality traits measuring Masculinity, Thoughtfulness and Restraint on the GZTS with overall scores on the SEI.

Questions concerning what makes one man behave differently from another have perplexed psychologists for decades. Tests like the MMPI, Guilford-Zimmerman Temperament Survey and the California Personality Inventory have attempted to objectively measure personality traits. Although these tests strive for objectivity, they are sometimes influenced by other variables. Voas (1958) found scores on these types of tests were affected by two types of biases: people tend to respond with what they believe is a "normal" response; and people tend to give what they feel is a socially desirable response.

Scores on these tests have also been found to be significantly influenced by the subject's socioeconomic status (Singer, Stefflre, & Thompson, 1958).

Bendig (1960) found significant decreases with measures of General Activity, Ascendancy, Sociability and Masculinity scores of the GZTS as a function of increases in age, while the measure for restraint increased with age.

Despite these problems with outside variables, personality tests can offer general information concerning human personality. Guilford, one of the developers of the GZTS, designed the test to measure personality traits among normal individuals. He did not consider individual scores but rather trends in scores.

The present study attempted to determine if particular personality traits as measured by the GZTS have any correlation with scores on the Coopersmith SEI. The definition of self-esteem as defined by Calhoun & Morse (1977) refers to "one's

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satisfaction with one's self-concept," while one's self-concept refers to the "substantive description one employs to identify his nature."

METHOD

Subjects

The population consisted of 28 adults, males and females, average age 22.0.

Apparatus

The apparatus involved the use of the Guilford-Zimmerman Temperament Survey (1949) and the Coopersmith Self-Esteem Inventory, Form C (Adult Form, 1975).

Procedure

Each subject was asked if he/she would like to participate in a psychological study that would involve filling out two personality surveys. If the subject consented, the surveys and answer sheets were given to each participant and asked that they be returned as soon as possible. A Pearson Product Moment Correlational Analysis was performed on the 28 completed surveys. Each of the ten factors scored on the GZTS was statistically correlated with the obtained SEI score.

RESULTS

A Pearson Product Moment correlation revealed that the Ascendancy factor on the GZTS had the highest positive correlation with the SEI score; the correlation factor being .732; p .01. Emotional-Stability and Objectivity measures followed with correlations of .690, p .01 and .673, p .01 respectively.

Sociability and General Activity traits appeared to be highly correlated with the SEI, with a Sociability factor correlation of .600 p .01 and General Activity correlation of .599, p .01. All of the remaining personality trait measures had low positive correlations with the exception of Thoughtfulness which had a low negative correlation of -.178, p .05; NS.

Restraint and Masculinity measures were both insignificant at the .05 level of significance with correlations of .181 and .164 respectively.

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TABLE 1

Product-Moment Correlation Coefficients Computed between GZTS Traits and the Coopersmith SEI

GZTS Trait	r	Probability
General Activity	.597	p .01
Restraint	.181	p .05; N.S
Ascendance	.732	p .01
Sociability	.600	p .01
Emotional Stability	.690	p .01
Objectivity	.673	p .01
Friendliness	.365	p .05
Thoughtfulness	−.178	p .05; N.S
Personal Relations	.468	p .05
Masculinity	.164	p −.05; N.S

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Discussion

The results from this study showed a number of significant positive correlations between GZTS scores and Coopersmith SEI scores. Ascendancy, as defined by Guilford & Zimmerman (1949), measures one's ability to persuade others, leadership habits and ease of speaking in public. Coopersmith (1975) defined Self-esteem as "the extent to which an individual believes himself to be capable, significant, successful and worthy"; thus it follows logically that those who measured high in self-esteem would also score high on the Ascendancy measure and low scores would go with low scores as the results indicated. Emotional Stability which measures evenness of mood and interests, composure and cheerfulness would also appear to be a trait of one who thinks highly of him/herself.

Coopersmith (1967) found that subjects high in self-esteem were not likely to be easily influenced by other's opinions. This would account for the high correlation (.673) between SEI score and Objectivity which Guilford & Zimmerman defined as "being thickskinned" (1949).

Coopersmith (1967) also found high scorers on the SEI made friends more easily. This would support the high correlation with Sociability which measured how much one likes seeking social contacts, social activities and making friends. The considerably lower correlation of SEI score with the Friendliness score (.365) might be explained by what Guilford & Zimmerman designed the Friendliness trait to measure. That is a tolerance of hostile action, respect for others and acceptance of domination (1949). Thus Friendliness did not necessarily measure one's ability to make friends while Sociability came closer to this definition.

The insignificant correlations for Restraint, Thoughtfulness and Masculinity can best be explained by referring to Guilford and Zimmerman's interpretation of these traits. Restraint was defined as serious mindedness and self-control; thoughtfulness as reflectiveness and observing of self and Masculinity as not easily disgusted, resistance to fear and inhibition of emotional expressions. These traits do not appear to have a great deal in common with one's feelings of capability, success or worthiness thus explaining the low correlations.

Because the GZTS was designed in 1949, the interpretation of the traits might be slightly outdated (ex: Masculinity). For

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this reason future research concerning this topic might be more valid if more recent surveys of personality traits were used.

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PURITY AND POLLUTION IN ZOROASTRIANISM

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Zoroastrian laws and rituals regulating ritual purity were integrated into the religion and practices of ancient Iranian society and presented as a unified part of the planned and purposeful handiwork of the supreme deity, Ahura Mazdā.

Ritual Purity

Purity and pollution are paired concepts which play extremely important roles in religious activities, with purity usually being linked to sanctity, and pollution to impurity, irreligion and danger. Personal and communal activities are often carefully regulated by rules and rites whose purposes are to protect the individual believer, the religious community, the deity or deities, and even the world itself from the impurities caused by pollution. These two concepts arise from within the context of the religious world-view, often having demonology as the determining factor, and thus modern notions of hygiene and disease which appear to be reflected in these religious rules and rites often bear only accidental correspondence. Purity and pollution in a religious system are usually not based on actual cleanliness or contamination and uncleanness respectively, but on ritual purity and the loss of this purity through transgressions which render the believer, for religious purposes, ritually unclean or polluted and exclude him or her from partaking in the activities of the religious community. The emphasis is, therefore, on ritual purity and not physical cleanliness or purity. This ritual purity can be of two forms: religio-ritual purity, in which a state of high ritual purity is required, usually for the performance of devotional acts; and, socio-ritual purity, which is required at all times of most members of a religious community and is usually acquired prior to or during rites of passage such as initiation into the faith and community, marriage, or return to communal life after childbirth or illness.

Zoroastrianism was the state religion of ancient or pre-Islamic Iran, and Zoroastrians survive to the present day in both Iran and India. Ritual purity was extremely important both doctrinally and in ritual practice for the Zoroastrians of ancient

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Iran, and thus regulated many aspects of life in pre-Islamic Iran. This paper will examine the concepts of purity and pollution in Zoroastrianism, study the laws regulating ritual purity, and examine the main causes of ritual impurity. Thereafter the means of regaining ritual purity will be discussed. Finally, the cosmic symbolism of Zoroastrian purity rituals will be elucidated. Thus the role of ritual purity and pollution in ancient Iranian religious beliefs and the importance of these beliefs within ancient Iranian society are clarified.

The Doctrinal Basis of Purity in Zoroastrianism

The ancient Indo-Iranian tribes developed a complex system of religious rules on purity and pollution, with ritual purity being important in the service of the gods and as a safeguard against evil. Among other practices, these peoples ensured the purity of the sacrificial ground on which worship was performed and that of all sacrificial instruments. It is highly probable that many of these Indo-Iranian codes and rites of purification were transferred to the Iranian peoples as their tribes migrated into Iran, and were inherited by Zoroastrianism. Available evidence indicates that the prophet Zaraθuštra (Zoroaster) had been trained as a priest in the cult of his tribe(1) and therefore knew many of these codes and rites, which he later incorporated, with numerous other aspects of doctrine and practice, in the faith he preached. The spread of Zoroastrianism onto the Iranian plateau and its acceptance by the ancient Iranian peoples granted this faith an important position in the ancient Near East. With the rise to power of the Achaemenian (549-330 B.C.), Arsacid (247 B.C.-A.D. 224) and Sasanian (A.D. 224-651) dynasties, and their spread of the political influence of these empires throughout the Near and Middle East, Zoroastrianism reached a zenith as one of the major religions of the ancient world. The doctrines and practices of the faith were enforced throughout the empires, particularly under the Sasanians, and thus Zoroastrian purity laws were strictly adhered to and purification rituals widely practiced.

In Zoroastrianism the concepts of religious purity and pollu-

(1) Zoroaster refers to himself as a *zaotar-* (Av.) "priest" and *manθran-* (Av.) "composer of holy words" in the Gāθās. See also Boyce "Zoaraster the Priest", *BSOAS* (1970).

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tion are firmly based on the fundamental cosmic and ethical dualism between *aša-* (Av.) "Righteousness, Truth" and *drug-* (Av.) "Lie, Deception" preached by the prophet. This dualism between Righteousness and Wickedness, Truth and Falsehood, Order and Disorder was personified by Zoroaster in a pair of primal spirits *Spənta Mainyu* (Av.) "The Beneficent Spirit" (Phl. *Spēnōg Mēnōg*) and *Aŋra Mainyu* (Av.) "The Destructive (or Evil) Spirit" (Ph. *Gannāg Menōg, Ahreman*). *Spənta Mainyu* is the hypostasis of *Ahura Mazdā* (Av.) "The Wise Lord" (Phl. *Ohrmazd*) the supreme deity and creator. These two spirits are, according to Zoroastrian doctrine, irreconcilably opposed to each other. The earliest part of the *Avesta* "Fundamental or Authoritative Speech" (the sacred scriptures of Zoroastrianism) are the *Gāθās* "hymns, songs" believed to have been composed by Zoroaster himself (c. 1500 B.C.). In the Gāθās the prophet proclaims:

> Now I will speak of the two spirits of whom, at the beginning of existence the holier thus spoke to the evil one: "Neither our thoughts, nor our teachings, nor our wills, neither our choices, nor our words, neither our deeds, nor our consciences, nor our souls are in accord."(2)

This irreconcilable opposition stems from the choice between good and evil made by these two spirits at the beginning of time:

> Then in the beginning these two spirits who are twins revealed themselves in a vision. They are, in thought, word and deed, the Better and the Bad. Between these two (spirits) the wise choose rightly, not so the unwise.
>
> And when these two spirits came together, in the beginning they created life and non-life, so that at the end will be the worst existence for the followers of the Lie, but the Best Mind for the righteous ones.
>
> Of these two spirits he who was of the Lie chose the doing of the worst things, (while) the holiest spirit, who is clothed in the hardest stones, chose righteousness, as do all who satisfy Ahura Mazdā through good deeds.
>
> Between these two spirits the demons did not choose rightly, for as they deliberated delusion came upon them so that they chose the Worst Mind. Then they rushed

(2) *Yasna* 45.2.

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together to Wrath through whom they afflict the life of man.(3)

According to Zoroastrian doctrine the righteous Creator, Ahura Mazdā, is by definition a perfect, good, rational and omniscient being from whom no evil can proceed, however indirectly, since a perfect being cannot originate imperfection. This is clearly stated in the *Škand Gumānīg Wīzār* "The Doubt-Dispelling Explanation" a ninth century A.D. Pahlavi text:

> Thus it is explicitly revealed that there are two first principles (and) not more; and also this, that good cannot arise from evil nor evil from good. From this it is possible to understand that what is completely perfect in goodness cannot produce evil. If it could (produce evil) then it is not perfect, because when one thing is described as perfect there is no place (in it) for anything else. And when there is no place for anything else, nothing else can emerge from it. If God is perfect in goodness and knowledge, ignorance and evil cannot be known from Him. If it is possible, then He is not perfect. If He is not perfect it is not possible to praise Him as the God who is perfectly good.(4)

Therefore good and evil, purity and pollution, life and death all proceed from two distinct loci. Hence all the spiritual and material creations were made perfect and pure, and everything which affects these creations: sin, irreligiousity, dust, dirt, stench, excrement, disease, decay and death, are perceived as the weapons brought into the material existence (Phl. *gētīg astišnīh*) by Ahreman when he invaded the world as part of his universal attack on Ahura Mazdā. Since they afflict the pure creations of Ahura Mazdā, these afflictions are conceived of as polluting the creations, and through this pollution with evil they render the afflicted creations ritually impure.

Zoroastrianism holds that human beings were created by Ahura Mazdā as allies in His cosmic struggle against Ahreman, and that humans consented to enter into physical existence to further this battle. It is said in the *Bundahišn* "Primal Creation" a Pahlavi text from the ninth century A.D.:

> Ohrmazd deliberated with the Perceptions and Immortal Souls of mankind, and having brought omniscient wisdom

(3) *Yasna* 30.306.
(4) *ŠGW* 8.101-110.

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to all mankind, said: "Which seems more useful to you, that I should create you into corporeal form, so that incarnate you will battle the Lie and vanquish it, and that I should resurrect you at the end perfect and immortal, and recreate you in corporeal form, and that you become immortal, unaging and without enemies forever; or is it necessary always to protect you from the Adversary."

The Immortal Souls of mankind saw, through that omniscient wisdom, thtat the evil from Ahreman would arrive into the material world and (also) the final non-opposition of the Adversary. And they agreed to enter the material world to become perfect and immortal in the final body up to eternity and eternal progress.(5)

Thus the function of all persons is to aid the increase of righteousness and combat the forces of evil through every action performed during their lifetime. The theological linking of the spiritual and material aspects of the universe, present in the Gāθās, indicates that just as righteousness and good actions by people in the material state aids individual and cosmic triumph of good over evil on the spiritual (Av. *mainyava-*, Phl. *mēnōg*) level, likewise the maintenance of purity through the protection and purification from evil of the seven holy creations in the corporeal (Av. *gaēiθya-*, Phl. *gētīg*) state furthers the victory of good over evil.(6) This, in turn, aids the final renovation of the universe (Av. *frašō.kərəti-*, Phl. *frašəgird*). Since this basic doctrine involves every member of the Zoroastrian community in combating evil through the ordinary tasks in life, these tasks are strictly regulated by rules and rites for maintaining purity.

The Extension of Purity Laws

This basic doctrine and its practice was greatly extended as generations of priests (O.P. *magu-, maguš,* Grk. *mágos*, Elamite: *ma-ku-iš*, Akkadian: *ma-gu-šu*, Middle Iranian: *mog*, Lt. sing: *magus* and plural: *magi*, with Old Iranian suffix: *-pati-* "chief," **magupati*, Phl. *mowbed,* N.P. *mōbad*, P.Gj. *mōbed*) elaborated the codes relating to ritual purity under Achaemenid and Arsacid rule. The ever-increasing concern for such codes gained almost over-riding importance during the reign of the Sasanian dynasty (A.D. 224-651) in Iran. This created a bar-

(5) *GBd.* 3.23-24 (TD2 38.14-39.11).
(6) Boyce, *History*, I.294.

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rier which often separated Iranian Zoroastrians from non-Zoroastrians, both Iranian and non-Iranian.(7) This separation persisted even after the Arab conquest of Iran in A.D. 651. According to the Persian Rivayats, dating from A.D. 1478-1773, it was beleived that:

> A non-Zoroastrian is not naturally fit for observing the precautions about carrion.(8)

Non-believers were regarded as being naturally unclean, and numerous rules exist for the regulation of interaction between Zoroastrians (P.Gj. *behdīns*) and non-believers (P.Gj. *juddīns*).(9) Further, all actions came to be regarded as either opposing Ahreman or aiding him, for:

> All acts and deeds are either meritorious works or sins(10)

with there being no neutral functions. A Zoroastrian cannot, according to religious law, remain neutral in the conflict between Ohrmazd and Ahreman. Those individuals who stay neutral, or whose good and wicked deeds are equal, are subject to the heat and cold of *Hammistagān* (Phl.) "The Place of the Motionless Ones" without savoring the rewards of heaven (Av. *garō.dəmāna-*, Phl. *garōdmān, wahišt*) or suffering the trials of hell (Av. *drujō.dəmāna-*, Phl. *dušox*).(11)

The main Avestan source on purity and pollution is the *Vidēvdāt* Av.) "The Law Against the Demons" (Phl. *Vendidād*), with its Pahlavi *zand* "commentary". It is a collection of prose texts in twenty-two chapters, the laws of purity being the subject of the greater portion of the collection. Much of the contents of the *Vendidād* had their origins in pre-Zoroastrian and early Zoroastrian times, but the only extant texts are usually assigned to the early Arsacid period (247 B.C.-A.D. 224). Additional material on purity and pollution is present in the Pahlavi books composed during the Sasanian era (A.D. 224-651). These include the *Šāyest nē Šāyest* "The Proper and the Improper," which with its supplementary texts is a collection of ritual prescriptions based on older magisterial decisions, the

(7) Ibid.
(8) *P.R.* U.I.85.3, D.82.
(9) Hence interaction with non-Zoroastrians was limited by religious stipulations. For example: sexual intercourse, *R.E.A.* question 42; common use of bathhouses, *R.E.A.* question 19; food prepared by non-Zoroastrians, *P.R.* U.I.271.6-13, D.267; utensils made by non-Zoroastrians, *P.R.* U.I.240.1-2, D.245; etc.
(10) *Phl. Riv. AF and FS.*29.2 (B.T.A. ed., I.157, II.140).
(11) *A.W.N.* 6.1-12.

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Ardā Wīraz Nāmag "The Book of the Righteous Wīrāz" which contains an account of a pious Zoroastrian's journey through heaven and hell during the Sasanid era, and the Pahlavi *Rivāyat Accompanying the Dādestān ī Dēnīg*, a text dealing with a great variety of subjects including ritual and legal dispositions. There are also the Pahlavi *Rivāyat ī Ēmēd ī Aśawahištan* "The Religious Explanations of Emed son of Aśawahišt" dating from the late ninth or early tenth century A.D., and the *Persian Rivāyats*, a collection of treatises, chiefly on matters of religious observance, sent by the Zoroastrians in Iran to their co-religionists, the Parsis, in India from A.D. 1478-1773.

In the tenth century A.D. many Zoroastrians seeking to escape Muslim persecution migrated from Iran to India, settling mainly in the state of Gujarat. These immigrants came to be termed *Parsis* "Persians", and formed the community of Indian Zoroastrians. Both the Iranian and Parsi Zoroastrian communities dwelt mainly within their own social groups until the late eighteenth century A.D., and thus preserved many of the purity laws and rites. Exposure to Western ideas, modernization and secularization in the nineteenth and twentieth centuries has attenuated the practice of many rules and rituals relating to purity and pollution, but numerous such regulations are observed by orthodox clergy and laity to the present day in both Iran and India.

Protection of the Creations from Pollution and Impurity

All seven creations of Ahura Mazdā, metal, earth, water, fire, plants, animals, and humans, are regarded as sacred and must be protected from pollution by the impure afflictions of the demons. Each creation is under the protection of a Beneficent Immortal (Av. *aməša.Spənta*, Phl. *amahraspand*): Ahura Mazdā protects mankind, *Vohu Manah* (Av.) (Phl. *Wahman*) "The Good Mind" protects animals, *Aša Vahišta* (Av.) (Phl. *Ardwahišt*) "Best Righteousness" protects fire, *Xšaθra Vairya* (Av.) (Phl. *Šahrewar*) "Desirable Dominion" protects metal, *Spənta Ārmaiti* (Av.) (Phl. *Spandarmad*) "Holy Devotion" cares for the earth, *Haurvatāt* (Av.) (Phl. *Hordād*) "Wholeness" looks after the waters, and *Amərətāt* (Av.) (Phl. *Amurdād*) "Immortality" cares for plants. Metal has to be kept free from rust, tarnish and misuse, and precious metals are not to be given to corrupt individuals.(12) Both the *Vendidād* and the *Persian Rivāyats*

(12) Boyce, *History*, I.296.

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contain elaborate descriptions of the purification of metals.(13) Metals include stone, crystal and gems since these too are considered manifestations of *Šahrewar*. Indeed, according to Zoroastrian theology there is a hierarchy of metals with regard to their purity and resistance to impurities: gold is the purest and most resistant to pollution; followed by silver; copper, tin, brass and lead; steel; stone; turquoise, ruby, amber and similar substances; earth; wood; and clay.(14)

The earth too has to be protected from pollution, and the *Vidēvdāt* prescribes severe punishments by whipping for persons who knowingly defile this creation.(15) Earth which has been rendered impure through pollution by *nasā* "carrion" has to be left barren and untraversed for one year in order to prevent spread of the impurity.(16) The *Persian Rivāyats* also mention numerous acts which must be performed to ensure that land is free of impurities prior to cultivation,(17) and states that whenever *nasā* is spotted on any land this *nasā* must be disposed of according to religious law so as to prevent it from speading its ritual impurity.(18)

Water, protected by the Beneficent Immortal *Haurvatāt*, is one of the two most vulnerable and venerated elements in Zoroastrianism, and also an object of the cult.(19) Water is used by most races and in many religions as the primary purificatory and cleansing agent. Unlike these religions, Zoroastrianism does not regard water as a primary purifying agent, and to use water to wash away dirt and impurities or to purify oneself ritually is a heinous sin for through such action the water is exposed to demonic impurities. The *Vendidād* states that one who pollutes water with *nasā* "carrion" is seized by the *Druj Nasuš* "The Corpse Demoness" and remains ritually impure forever.(20) The Pahlavi *Rivāyat ī Ēmēd ī Aśawahištan* mentions the means of purifying water made impure by *hixr* "excrement",(21) and the *Persian Rivāyats* state that both *nasā* "carrion" and *hixr* "excrement" have an equally heinous

(13) *Vd* 7.73-75; *P.R.* U.I.239-241, D.243-246.
(14) Ibid.; the arrangement of the list is clearly motivated by economic factors.
(15) *Vd* 7.10-25.
(16) *Vd* 7.1-9.
(17) *P.R.* U.I.84.13-85.18, D.81-83.
(18) *P.R.* U.I.18-19, D.83.
(19) Boyce, *History*, I.296.
(20) *Vd* 7.27. Also *A.W.N.* 38.1-7.
(21) *R.E.A.* question 36.2-5.

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effect on water.(22) These *Rivāyats* also devote considerable attention to the purification of defiled waters.(23) The *Gizistag Abāliš* "The Accursed Abāliš", a ninth century Pahlavi text containing questions and answers on Zoroastrian religious matters from a theological debate supposedly conducted at the court of the ʿAbbāsīd caliph al-Maʾmūn (ruled A.D. 813-833), mentions that to pollute water with *nasā* is equivalent to leading a bull to slaughter by a pack of lions or wolves.(24) Hence no impure substances such as *nasā* "carrion", *hixr* "excrement" or materials defiled (and made ritually impure) by *nasā* or *hixr* should be allowed into contact with water. Water can be used for purification and cleansing only after that which is to be purified – be it human, animal, plant or thing – has first been purified with *gaomeza-* (Av.) (Phl. *gōmēz*) "bull's (or goat's) urine". Often, after purification by washing with *gōmēz, ak* (Phl.) "dust", is also used for a similar purpose, and only thereafter is water (Av. *āp-*, Phl. *āb*, N.P. *āb*, P.Gj. *āw*) used. The *Ardā Wīrāz Nāmag* mentions the fate of a man dragged into deepest hell for polluting the waters by bathing directly in them without first cleansing himself with *gōmēz*.(25) The fact that elaborate precautions are taken to prevent water from being polluted must always be considered when comparing Zoroastrian purification rituals with those of other faiths like Judaism, Christianity and Islam. Many similarities in intent and usage do exist between Zoroastrian purity rituals and those of the above mentioned religions; however none of those three faiths regards water as vulnerable to pollution if used for purificatory processes, and therefore base their purity rituals on the cleansing power of water. To Zoroastrians such use of water for purification from ritual or actual impurity would not be considered an act of purification but one of deliberate and grave pollution of the sacred elements. The Zoroastrian reverence for the purity of the waters was noted by Herodotus, in the fifth century B.C., who stated, about the Iranians, that:

> They have a profound reverence for rivers: they will never pollute a river with urine or spittle, or even wash their hands in one or allow anyone else to do so.(26)

(22) *P.R.* U.I.82.6-12, D.78.
(23) *P.R.* U.I.86.2-89.5, D.83-92.
(24) *G.A.* 2.2.
(25) *A.W.N.* 58.4.
(26) Herodotus, *The Histories,* I.136.

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Fire, like water, is both extremely vulnerable to pollution and also highly venerated and used as an object in the cult.(27) According to Zoroastrian doctrine fire should never be polluted by the placing or dropping of materials, other than those which are ritually pure, into it. Thus only clean, dry, fragrant woods and frankincense are offered to a fire during the *Bōy* ceremony by present-day Iranian (and Parsi) Zoroastrians. The Pahlavi texts such as the *Nīrangistān* state that a portion of the fat from a sacrificial animal ought to be offered to the fire.(28) This practice is also mentioned in the *Persian Rivāyats*.(29) The *Vendidād* dictates that the death penalty be imposed on anyone who deliberately burns carrion over a fire.(30) Herodotus noticed this reverence for fire, stating:

> The Persians believe that fire is a god, and never burn their dead.(31)

Yasna 9 and the *Persian Rivāyats* mention that Kərəšāspa, a legendary hero, was excluded from Paradise because his cooking pot accidentally overturned, polluting the fire.(32) Thus a Zoroastrian cooking over an open flame is required to ensure that nothing spills into the fire.(33) Similarly, rubbish cannot be burnt in a fire but must be disposed of in some other manner. In Iran Zoroastrians build a small sealed structure called a *lard* which has a flat roof with a small opening in it through which rubbish is thrown into it and then acid poured in to consume the rubbish.(34) Pollution of fire by breath and saliva during religious ceremonies is prevented by *mōbads* donning a mouth and nose mask (Av. *paitidāna-*, Phl. *padām*, N.P. *panām*, P.Gj. *padān*) prior to commencing such ceremonies. Additionally, a sacred fire should never be quenched.

Animals and plants too can be polluted by evil and thus rendered impure. In the case of all good creatures, many cases of pollution can be avoided through diligent attention to the codes of purity. However some cases of pollution, especially that caused by death, the most serious affliction cast upon creation by the Evil Spirit, are inevitable, and thus elaborate

(27) Boyce, *History*, I.296.
(28) *N.* 19.8. (Sanjana, Hj 126V, Kotwal and Boyd, TD 86V).
(29) *P.R.* U.I.264.6-8, D.264.
(30) *Vd* 8.73-74.
(31) Herodotus, *The Histories*, III.16.
(32) *Yasna* 9.11-12; *P.R.* D.516-520.
(33) *Phl.Riv.Dd.* 37.6 (Dhabhar, ed., 115-116).
(34) Boyce, *History*, I.297.

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countermeasures are present to isolate the source of pollution and restore purity. All living creatures originally belonged, in Zoroastrian doctrine, to one of two classes; they were either Ahuric (good) or daēvic (evil) beings.(35) The basis of this division is seemingly what is useful or agreeable to human beings.(36) Ahuric creatures include the dog, hedgehog, cow, sheep, horse, cock and owl. Each such plant or animal must be assisted to grow to its perfection, and it is a grievous sin to slaughter, sacrifice or cut down such a creature while in its formative stages of life.(37) Daevic creatures, however, are regarded as naturally impure and polluting, and to slay them in abundance is considered a positive virtue. Such creatures are termed "noxious creatures" (Av. *xrafstra-*,(38) Phl. *xrafstar*, M.M.P. *frestar*) and include mainly insects such as ants, bugs and locusts, reptiles like the snake and frog, rodents such as mice, and predatory beasts such as wolves or tigers; i.e., creatures which are harmful to people or crops. The slaying of such creatures is ordered by religious law,(39) and is a meritorious act on par with caring for the good creations.(40) This practice of slaying noxious creatures was recorded by Herodotus during the reign of the Achaemenid kings and by Agathias under the Sasanians.(41) In Judaism too there is an abomination of reptiles and creeping animals, and Moses is said to have prohibited mice and unclean animals. This prohibition was, however, never as detailed or vigorous as that in Zoroastrianism. In Judaism contact with such creatures makes the person ritually unclean until the evening.(42) Some noxious creatures such as cats, or their products, such as honey from bees and silk from silkworms, are agreeable to many individuals, and elephants were used in the army of the Achaemenid king Darius III at the battle of Arbela and by the Sasanid monarch Xusrō II.(43) Fur-

(35) *GBd.* chapters 13, 22 and 23.

(36) Boyce, *History*, I.298.

(37) *P.R.* U.I.76.6-7, D.71; injunction against slaughter of good animals less than one year old; only after they are full-grown may they be sacrificed and the meat consumed.

(38) Used by Zoroaster in *Yasna* 28.5, 34.5.

(39) *Vendidād* states that one is required to slay *xrafstars* to atone for sins. *A.W.N.* 14.11-12, describes the heavenly reward of persons who slew *xrafstars*.

(40) *Phl. Texts* 125.5; Kotwal, *Supp. Texts to Šnš*, 20.5 (p. 83).

(41) Herodotus, *The Histories*, I.140; Agathias, 2.24.

(42) *Leviticus*, 11.31.

(43) Anabasis Alexandri, III.8, transl. E. Iliff Robson (London, 1954), 247; and

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ther, the lion came to be considered a symbol of sovereignty. Thus in addition to Ahuric and daēvic creatures, there evolved a third category of animals, those noxious animals which

> Ohrmazd through omniscience alters for the advantage of the creatures.(44)

This category seems to have included non-native animals which were introduced into Iran as the native peoples encountered other civilizations.(45)

Human beings as the foremost of the seven creations, are required to keep themselves spiritually and ritually pure to aid Ahura Mazdā in the struggle against evil. Additionally, since they have powers of reason and action, humans must be vigilant in their care for the other six creations. In order to purify persons from ritual impurity, and thus aid the cause of *aša*, the laws and rites of purity evolved.

Nasā and Hixr: Main Causes of Ritual Impurity

As described above, there are numerous material causes for pollution and impurity. However the greatest source of ritual pollution and impurity arises from the most powerful attack by evil on the good creations: death. In Zoroastrianism there are two types of dead matter: carrion and excrement. When an animal or human being dies the corpse or any portion of it is immediately polluted by the *Druj Nasuš*(46) the demoness of decay and death (the Corpse Demoness) who is the main cause of pollution in the material world.(47) This carrion is termed *nasā* (Av. *nasu-*, Phl. *nasā*, M.M.P. *nasāh*, N.P. *nasā*, P.Gj. *nasā*) and the *Druj Nasuš* is the personification of this evil. *Nasā* is always in the highest state of ritual impurity unless it has been ritually purified and the *Druj Nasuš* driven away. Thus to bring nasa into contact with any of Ohrmazd's creations is one of the most heinous sins, especially if these creations are water or fire.(48) The defiling power the Corpse Demoness acquires on entering a corpse is directly proportional to the spiritual good-

A. Christensen, *L'Iran sous les Sassanides* (Copenhagen, 1944, 245. *Kitāb al Ḥaywān*, ed. A. Muhammad Harun, vol. 7, 181.

(44) *GBd.* 22.29 (TD2 146.13-147.5).

(45) A. Tafazzoli "Elephant: A Demonic Creature and a Symbol of Sovereignty" in *Monumentum H.S. Nyberg, Acta Iranica,* II (Leiden, 1975).

(46) *Dd.* 16.7 (Dhabhar, ed. 36).

(47) *Vd* 7.2.

(48) *Vd* 7.25-27.

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standing of the victim. The corpse of a righteous man (Av. *Ašavan-*) is extremely contagious, whereas that of an evil man (Av. *drəgvant*) is only slightly contagious.(49) This is because a righteous person who purifies himself or herself through good words, thoughts and deeds is both a pure being and a powerful opponent of evil(50) whose prayers can purify all righteous creations.(51) The triumph of evil, through death over the body of such an *ašavan* requires all the forces of Ahreman, and thus the corpse becomes filled with impurity and is capable of widespread pollution.(52) However Ahreman and his pandemonium have little trouble slaying a *drəgvant* whose life and body is constantly filled with evil and impurity. Therefore very little impurity is present in the corpse of an evil person, which is thus no more polluting than the

year old, dried up carcass of a frog.(53)

The corpse of a non-Zoroastrian is also less noxious, but causes loss of ritual purity if touched.(54)

Nasā of a human being extremely impure and polluting, the corpse cannot be buried,(55) burnt(56) or cast into water,(57) as this would pollute the creations of Spandarmad, Ardwahišt and Hordād respectively. Thus corpses were exposed to the elements on a dry desolate peak(58) or ground, or within a funerary tower(59) (Av. *daxma-*, Phl. *daxmag*, N.P. *daxma*, P.Gj. *dokhma*). The custom of exposing the corpses in funerary towers is practiced, to the present day, by both Iranian and Parsi Zoroastrians. Before the corpse is exposed, religious ritual requires that it be gazed upon by a dog or bird of prey. The gaze of such a creature is held to be purifying as it is believed to drive away the *Druj Nasuš*.(60) This ceremony is termed *sagdīd* (Phl.) "seen by the dog". Additionally several maθras "holy utterances" such as the *Srōš Bāj* which contains the *Kəm Nā*

(49) *Vd* 5.27-28; *G.A.* 6.3.
(50) Boyce, *History*, I.301.
(51) *Vd* 11.2.
(52) *Vd* 5.38.
(53) *Vd* 5.30.
(54) *P.R.* U.I.136.1-4, D.151-152.
(55) *Vd* 6.10-11.
(56) *Vd* 7.25-27; *P.R.* U.I.82.6-17, D.78-79.
(57) *Vd* 7.25-27, 7.49-51; *P.R.* U.I.79.31, D.75, and U.I.82.6-17, D. 78-79.
(58) *Vd* 6.45, 8.14.
(59) *Vd* 5.13; *P.R.* U.I.81-82, D.77-78.
(60) *Vd* 7.3.

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Mazdā prayer, excellent for the smiting of *Druj Nasuš*, are chanted.(61) After *sagdīd* and desiccation dead matter ceases to be *nasa* and is no longer impure or polluting.(62) Once the body has been exposed the bones may be collected and placed in an ossuary (Phl. *astōdān*).(63) The custom of *sagdīd* was noted by Herodotus who comments:

> a male Persian is never buried until he body has been torn by a bird or dog.(64)

In addition to *nasā*, all that issues from the body as refuse, including skin, saliva, breath, cut nails and hair, blood, semen, the products of menstruation, human urine and feces are considered dead once expelled from the body. When seized by the *Druj Nasuš* these become ritually impure and capable of pollution. Such excrement is termed *hixra* (Av.) (Phl. *hixr*). Although the *Pahlavi Rivāyat Accompanying the Dādestān ī Dēnīg* distinguishes between *nasā* and *hixr*, stating that *hixr* is excrement which is not moist,(65) it is clear that in the Pahlavi sources *nasā* refers specifically to carrion and *hixr* to both dry and liquid bodily substances once these are detached from the body. Originally however the distinction between *nasu-* and *hixra-* was less well defined, and in the *Vendidād* the term *hixra* is used in reference to polluting matter that issues from corpses.(66) Ritual impurity caused by *hixr* is usually less grave than that of *nasā*; an exception is the effect of *hixr* on water and fire, where it equals nasa in its polluting power.(67)

The constant presence in the material world of both *nasā* and *hixr*, through the need to perform bodily excretions and functions and the process of disease and death which produce these impurities, results in Zoroastrians being constantly exposed to pollution and resultant loss of ritual purity. A Zoroastrian who comes into contact, either deliberately or accidentally, with *nasā* (or in some instances, even *hixr*) loses his or her ritual purity and becomes polluted or filthy (Phl. *rēman*, N.P. *rīman*, P.Gj. *rīman*) and is called a polluted person (Phl. *rēmanīg*, N.P. *rīmanī*, P.Gj. *rīmanī*). Such a person being ritually impure, is

(61) Boyce, *History*, I.303.
(62) Boyce, *History*, I.301.
(63) *Vd* 6.50.
(64) Herodotus, *The Histories*, I.142.
(65) *Phl. Riv. Dd.* 55.3.
(66) *Vd* 5.14, 5.16.
(67) *P.R.* U.I.82.6-17, D.78-79.

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excluded from the religious community until he or she has regained ritual purity.(68)

Purification Rituals: The Regaining of Ritual Purity

Ritual purity is regained through one of several purification rituals which are administered to the *rēmanīg* by one or two purifiers (Av. *yaoždāθrya-*, Phl. *yōždāhrgar*, N.P. *yoždāsragar*, P.Gj. *yaozdāthrya*), one or both of whom are *mōbads*. The purification ritual that is undergone depends on the impurity to which the ritually impure person was exposed.

Most of the major purification rituals appear to have developed from an original threefold process:(69) the recital of holy utterances (Av. *Mąθra-*, Skt. *mantra-*, Phl. *mānsar*) in Avestan by both purifier and polluted person in order to ensure ritual purification through the purificatory power of holy utterances; an internal purification of soul and body through the drinking of *nīrang* "consecrated bulls' urine" (Phl. *nērang*, N.P. *nīrang*, P.Gj. *nīrang, nīrangdīn*) to which a pinch of fire ash was added, referred to in the *Vidēvdāt* as *gəuš maēsmana ātryō.paiti iristəm* "a mixture of ashes with bull's urine"(70) (Phl. *ādurestar* "fire ash"), and finally, cleansing of the external surfaces of the body with unconsecrated bull's urine (Av. *gaomēza-*, Phl. *gōmēz, pādyāb*, N.P. *pājōw*, P.Gj. *gōmēz*). The final cleansing with *gōmēz* was often followed by cleansing with dust (Phl. *xāk*, N.P. *xāk*, P.Gj. *khāk*) and then water (Phl. *āb*, N.P. *āb*, P.Gj. *āw*). The *gōmēz, xāk,* and *āb* were sprinkled over the *rēmanīg*'s body so as to prevent contact (Phl. *paywand*) between the purifier, who was in a state of high ritual purity, and the polluted person; such contact would transfer the impurity to the purifier. Since this purification was administered from the head or top (Av. *barəšnu-*) of the *rēmanīg* the ritual was known as the *Barašnūm* (Phl.). This purification was carried out in the open and during the daylight hours so that the purificatory effect of the sun's rays could aid in the expelling of the *Druj Nasuš*.(71)

From this basic three-fold purificatory ritual there evolved three major purification ceremonies: the *Barašnūm ī nō šab*

(68) *Vd* 9.35.
(69) Boyce, *History*, I.311-312.
(70) *Vd* 5.51.
(71) *ZXA*. Xwaršēd Niyāyišn 12-13 (Dhabhar, ed., I.20).

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which was used to purify Zoroastrians rendered *rīman* through actual contact with *nasā*; the *Rīman* ritual, developed by the Parsis for purification from *nasā* once the *Barašnūm ī nō šab* had acquired a purely religio-ritual purificatory function; and the *Nāhn* rituals which developed for socio-ritual purificatory purposes. In addition, the *Pādyāb-Kustī* ceremony, performed daily by all Zoroastrians, initially involved cleansing first with *gōmēz* and thereafter with water; *gōmēz* is now rarely used in this rite. Variants of the original three-fold purification ritual were also developed for simple purification after contact with *hixr*. The development of purification rituals having specific functions probably occurred due to the evolution in Zoroastrianism of two fairly distinct forms of ritual purity: religio-ritual purity, which involves a state of high ritual purity required for the performance of the most sacred liturgical ceremonies; and socio-ritual purity, which is required at all times of most members of the Mazdean community. Religio-ritual purity is usually acquired prior to entering the priesthood, before performing religious tasks such as tending the *Ātaš Bahrām* (N.P. P.Gj.) (Phl. *Ātaxš ī Wahrām*) "Fire of Victory", and consecrating *nīrang* in the *Nīrangdīn* ceremony. Socio-ritual purity ensures that every member within the religious community is ritually pure and distinct from all non-members. Further by its requirement during rites of passage such as initiation into the faith and community (during the *Novjote* "new born" ceremony), marriage, and after menstruation or childbirth, a basic level of socio-ritual purity of the community is maintained at all times.

The cosmic and ethical dualism in Zoroastrianism provided the basis for the importance of ritual purity in both doctrine and practice of the faith. This importance is best expressed in the *Vendidād* where it is written:

Yaožda mašyāi aipi.ząθəm vahištā (72)

"Purity for man from birth is best".

This purity is regarded as being embodied in the faith itself. (73) Indeed ritual purity is of such great importance that a *yaoždāθrya* who performs his functions correctly is said to

(72) *Vd* 5.21. This line as quoted in the *Vendidād* is a misunderstanding of *Yasna* 48.5, but the sense in which the writers of the *Vendidād* understood it reveals the importance acquired by the concept of ritual purity.

(73) *Vd* 5.21.

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delight the fire, water, earth, trees, cattle and righteous persons.(74) The soul of such a *Yaoždāθrya* is rewarded in heaven with the bountifulness of Paradise.(75)

The Cosmic Symbolism of Zoroastrian Purity Rituals

The theological linking of the spiritual and material aspects of the universe, present in the Gāθās, forms the basis of all actions in both the spiritual state and the corporeal world. All thoughts, words and deeds can serve to further the cosmic triumph of Ahura Mazdā over Ahreman, Righteousness over Evil, in these material and spiritual realms. Hence the Zoroastrian creed is

humat, hūxt, huwaršt (Phl.)
"good thought(s), good word(s) (and) good deed(s)."

For only by adhering to this creed can human beings act in accordance with the will of Ahura Mazdā and the laws of Righteousness. All religious rituals also serve more than a limited corporeal function; they aid in the final renovation of the universe (Av. *frašō.kərəti,* Phl. *frašagird*). Thus purification rituals not only cleanse the individual's physical body but also purify his or her soul, and through this assist in the vanquishing of Evil. For this reason the Gāθās state:

yaoždå måsyāi aipī ząθəm vahištā (Av.).(76)
"Purity is best for man from birth."

This passage is repeated in the *Vidēvdāt* in reference to the laws of purity,(77) and the Pahlavi *zand* to this *Vidēvdāt* passage also states:

yōǰdahrīh mardōm pākīh pad ruwān pas az zāyišn pāhlom (Phl.).(78)
"Purity of man, (and) purity for the soul, is best from birth."

Further, the spiritual role and power of rituals is emphasized in the *Dēnkard*:

guft ēstēd kū pad gētīg rāyēnišnīh nīrang hazār nē čiš. ud pad mēnōg rāyēnišnīh nīrang ek čiš ān.(79)
"It has been said: In taking care of material things a

(74) *Vd* 9.42.
(75) *Vd* 9.44.
(76) *Yasna* 48.5.3.
(77) *Vd* 5.21.
(78) *Phl. Vd.* 5.21, quoted also, in a slighly different form, in *N.M.* 1.2.8.
(79) *DKM* 577.

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thousand rituals are nothing. In taking care of spiritual things one ritual is that thing."

The emphasis of religious rituals, including those relating to purification, is thus not directed primarily at the corporeal world. Purification is undergone to attain a symbolic religious state of virtue and purity, and not merely to achieve physical purity, though this may be an actual result of the rites.(80) Thus the consecrated items, sacred instruments and the entire rituals themselves have religious symbolism and spiritual roles linked to them. This symbolism and spiritual function integrates these rituals with the cosmological and eschatological aspects of the faith. It is this role, and not an original sanitary objective,(81) that has determined the great importance and ensured the elaboration and survival of these rituals through the centuries.

Gōmēz (Phl.) (Av. *gaomēza*, D. *pājōw*) "unconsecrated bull's urine" and *nīrang* (Phl.) "consecrated bull's urine"(82) are the product of the cow (Av. *gau-, gav-*, Phl. *gāw*). As products of this sacred animal, both *gōmēz* and *nīrang* are pure substances and not *nasā* or *hixr*. The fact that *gōmēz* and *nīrang*, both obtained from the urine expelled from the body of cows and bulls, are not considered excrement may be due to the belief, in Zoroastrian cosmogeny, that all the plants and animals arose from the body of the sole-created *gāw* which was slain by Ahreman when he first invaded the material creation.(83) Ahreman's act of destruction was thus transformed by Ahura Mazdā into one through which the material creations were furthered. Thus both nirang and gomez are powerful weapons against the demons, especially the *Druj Nasuš* "Corpse Demoness". The drinking of *nīrang* during purification is done

pāk-i tan, yōždsr-i ruvān rā (Pz.)

"for the purity of the body (and) purification of the soul."

(80) Modi, *C.C.*, 88-89 and 103-107 argues that purity was maintained by Zoroastrians primarily for hygienic reasons, and only secondarily for purposes of ritual purity. It must be noted, that in Zoroastrianism, while physical purity does indeed aid spiritual purity, merely ensuring the cleanliness of the body does not further spiritual salvation. *Nīrang* is drunk and the *Patēt* recited during all major purification rites to ensure purity of the soul.

(81) Modi, *C.C.*, 107.

(82) Consecrated through the *Nīrangdīn* ceremony. See Modi, *C.C.*, 253-259, for details of this ceremony.

(83) This legend is mentioned in *GBd.*4.20-21 (TD2, 43.11-44.2), 4A.1-6 (TD2, 46.3-47.6), 6E.1-6 (TD2, 68.1-12).

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These words indicate both the symbolic purificatory role of this consecrated product of a sacred animal, and the religious desire of the candidate to attain both spiritual and physical purity during life. *Gōmēz*, being unconsecrated, cannot purify the soul and is hence not drunk. However, it is regarded religiously and symbolically potent enough to vanquish the *Druj Nasuš* in the physical being of a person undergoing purification and is thus applied over the body surface. Further, since water is considered extremely susceptible to pollution, the *gomez* serves to symbolically cleanse the body of ritual pollution thus preventing containation of water applied to the body. Most importantly, the use of *nīrang* and *gōmēz* during purification rituals symbolically brings into the cosmic battle-field the cow, one of Ahura Mazdā's most beneficent creations, and the representative of the animal kingdom. Further, the use of these products of the *gāw* ensures the assistance of the Beneficent Immortal Vohu Manah (Av.) (Phl. *Wahman*) "The Good Mind," the protector of the cow, in the struggle against the *Druj Nasuš*. It is for these symbolic reasons, and not because they serve as disinfectants (due to their containing ammonia), that *gōmēz* and *nīrang* are needed for the purification rites. Symbolism and demonology, and not modern notions of sanitation or hygiene, are the determining factors.

The addition of *bhasam* (P.Gj.) (Phl. *ādurestar*) "fire-ash" ensures the assistance of the fire of Ahura Mazda:

ātarš mazdā̆ ahurahe (84)

"the fire of Ahura Mazdā"

which according to the *Ātaxš Niyāyišn* (Phl.) "Litany to fire" is:

Ātaxš ī Ohrmazd pus (Phl.)(85)

"Fire, the son of Ahura Mazdā."

Further, the guardian of fire, the *aməša.spənta* Aša Vahišta (Av.) (Phil. Ardwahist) "Best Righteousness" is thus also enlisted in the attack on the *Druj Nasuš*. Asa Vahista is also present through the purifying rays of the sun which is believed to purify the earth from demonic defilement and make the waters pure.(86) Indeed it is said that if the sun did not rise the demons would destroy all seven *kišwar* (Phl.) "climes, regions"

(84) *Yašt* 10.3.5 (*Mihr Yašt*); *Vd* 18.18, 18.20, etc.: *ātarš ahurahe mazdā̆*.
(85) *ZXA*. Ātaxš Niyāyišn 5 (Dhabhar, ed., I.37).
(86) *ZXA*. Xwaršēd Niyāyišn 12-13 (Dhabhar, ed., I.34-25).

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of the world.(87) The pomegranate leaves (P.Gj. *urwarām*) represent the realm of plants (Phl. *urwar*). It is also an ancient Near Eastern symbol of fertility, fecundity and immortality. In purification rituals not only do these leaves represent the entire vegetable creation and the hope for immortality and fertility, but also symbolize the presence of the Beneficent Immortal Amərətāt (Av.) (Phl. Amurdād) "Immortality." *āk* (Phl.) "dust, earth" represents the earth with its purifying and regenerative powers, and brings the Earth Goddess,(88) the Beneficent Immortal Spənta.Ārmaiti (Av.) (Phl. Spandarmad) "Holy Devotion," who is said to be the daughter of Ohrmazd(89) and the mother of humanity.(90) Spandarmad is also represented, in these rituals, by the earth surface of the *gāhs* in which the ritual occurs. The use of water (Av. *āp-*, Phl. and N.P. *āb,* P.Gj. *āw*) in the purification rites represents wholeness and health, and symbolically invokes the aid of Haurvatāt (Av.) (Phl. Hordād) "Wholeness" the Beneficent Immortal who protects the waters. Further, water is said to be the "eye" created by Ahura Mazdā, and represents the deity Ardvīsūra Anāhita (Av.) (Phl. Anāhīd) of propitious eyes(91) who purifies the sperm of men and the wombs of women.(92) Similarly, Xšaθra Vairya (Av.) (Phl. Šahrewar) "Desirable Dominion" is symbolically represented in the purifications through the use of a metal-blade on the *navgirē* "metal knife" to draw the *kaš* "furrows", and the stone steps on which the ritual ablutions are performed (these are three and five in number). The *kas*, drawn with the assistance of Sahrewar, form the boundaries of a sacred or pure space, the *pāwī*. This function parallels the cosmic function of this Beneficent Immortal, who, as the crystal sky, it traps the Evil Spirit within the space formed by Spandarmad, the earth.(93) Man, the supreme creation of Ahura Mazdā, and the means by which the Evil Spirit and his pandemonium will be smitten and vanquished. (94) is represented by the candidate undergoing the purifi-

(87) Ibid.
(88) *Yasna* 47.3.
(89) *Yasna* 45.4; *Vd*. 19.13. 16; *Dk* 9.53.27, 9.54.2.
(90) *Yasna* 48.5.
(91) *ZXA*. Xwaršēd Niyāyišn, 5 (Dhabhar, I.16).
(92) *Yašt* 5.2 (Ardvīsūr Yašt).
(93) *GBd*. 6A.1-5 (TD2, 60.7-61.10), 1A.6 (TD2, 18.3.6); *Sad Dar Bundahišn,* 75.1. (Dhabhar, ed., 146).
(94) *GBd*. 1A.4 (TD2, 17.11-13).

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cation. This candidate, like all human beings, is incarnate in the world of mixture (Phl. gūmezišn) of good and evil and strives to achieve separation (Phl. wizārišn) of himself or herself from the evil that pollutes both body and soul. The purifier (Av. yaožd̄āθrya, Phl. jo̊jdahrgar), as a priest and righteous man in a state of ritual purity, is Ahura Mazdā's direct representative on earth, the bearer of the *Weh Dēn* (Phl.) "Good Religion," and the performer of the rituals and the *māθrās* necessary for the vanquishing of evil.

The number three, as in the three stone steps on which the ablutions are performed and the three-fold ablutions, represents good thoughts, good words and good deeds, and may also symbolize the three *Sōšyans* (Phl.) (Av. *saošyās*) "saviours" through whom, in the final millennium, the purification of the world from evil will be brought about.(95) In Zoroastrian belief the five-stone steps on which the ritual ablutions are performed represent the five Gāθâs and the five *gāhs* "watches" of the day; but in Iran these are said to represent the five evils: lie (Phl. *druz*), greed (Phl. *waran*), envy (Phl. *arešk*), lust Phl. *az*), and (Phl. *xēšm*) which must be stamped underfoot.(96)

From the above it is clear that in the purification rituals Ahura Mazdā, the six Beneficent Immortals Vohu Manah, Aša Vahista, Xšaθra Vairya, Spəntа Ārmaiti, Haurvatāt and Amərətāt, and the seven holy creations. metal, earth, water, fire, plants, animals and human beings are all symbolically present and involved, They engage in combat, during the rituals, with the *Druj Nasuš* which is the manifestation of harm, death and destruction, the main evils inflicted by Ahreman and his legions during their attack on the corporeal and spiritual realms of Ahura Mazdā. Thus this conflict between purity and pollution represents, in microcosm, the cosmic battle between Ahura Mazdā and Agra Mainyu, Righteousness and Evil. The rituals themselves are conducted within a pawi "pure space" constructed on the earth, the realm of Spəntа Ārmaiti, by the yaožd̄āθrya, and once the *Druj* is brought into this space it is trapped within it by the *kaš* (drawn using metal, a representation of *XsaOra Vairya*) and cannot escape to inflict harm on anything or anyone else so long as ritual precautions are main-

(95) See *GBd.* 33.39-34.32 (TD2, 218.5-228.5) for the doctrines on the *Sōšyans.*

(96) Boyce, *Stronghold,* 128.

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tained. This parallels the getig world into which evil was lured and then confined within the boundary of the sky (Phl. *asmān*), the creation of Šahrewar.(97) In the *Greater Bundahišn, Θwāša-* (Av.) (Phl. *spihr*) is also equivalent to the space contained within the firmament, this space being also termed *gāh* (Phl.) "place, time, watch (of the day)."(98) Thus in Zoroastrian cosmology, space and time are closely linked and have a similar character. Hence the purification *gāhs, pāwīs* and the *gētīg,* world are all creations in limited space and time which serve to trap evil within them.(99) And, as in the cosmic struggle, where it is predicted that Ahreman will be defeated, made harmless and non-existent (phl. *anastagih*) and then cast out of existence,(100) so too in the purification rites the *Druj Nasuš* is rendered innocuous and once expelled from the person's body can no longer manifest itself and is compelled to flee to hell. Once Ahreman and his demons are defeated and the Evil Spirit is cast out of existence, the corporeal world is returned to a state of material and ritual purity and perfection,(101) just as the individual believer does once the *Druj* is expelled from him or her. This represents, in microcosm, a recreation of *frašō.kərəti* (Av.) (Phl. *frašagird*) "the making excellent of the universe," in which there is the separation (Phl. *wizārišn*) and expulsion of evil and the renovation of the material and spiritual worlds. Metaphors of eschatology are thus connected via ritual to the physical world, and this explains the reason why the *Barašnūm ī nō šab*, and by extension all other purity rituals, are vital for the triumph of righteousness over evil. Purity of the individual ensures eventual purification of the universe, obeys the will of Ahura Mazdā, and maintains the laws of Righteousness.

The Zoroastrian laws and rituals of regulating ritual purity were therefore integrated into the religion and ancient Iranian society and presented as a unified part of the planned and purposeful handiwork of the supreme deity and creator of the universe: Ahura Mazda. The rituals and their symbolism link

(97) See note 93.
(98) R.C. Zaehner, *Zurvan: A Zoroastrian Dilemma* (New York, 1973), 88-89.
(99) See also: *ŠGW* 4.63-80 which compares Ahura Mazdā to a wise gardener who creates a snare (Phl. *dām*) (the world) to entrap the creature (Ahreman) which is attacking His creation.
(100) Ibid.; *GBd.* 34.27-32 (TD, 227.4-228.3); *ŠGW* 4.70.71.
(101) *GBd.* 34.32-33 (TD2, 228.1-5); *ŠGW* 4.80.

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the material and spiritual worlds, making the entire universe a holy creation whose purity must be strictly maintained at all times. For this reason, Ahura Mazdā is represented as saying to the prophet Zaraθuštra, the founder of the Zoroastrian religion:

> In that material world of mine, I who am Ohrmazd (presides) over the righteous man, and Wahman over cattle, Ardwahišt over fire, Šahrewar over metals, Spanarmad over the earth and virtuous women, Hordād over the waters and Amurdād over the plants. Whoever teaches care for these seven (creations) does well and pleases (us). Then his soul will never arrive at kinship with Ahreman and the demons. If he has cared for them [the creations], then he has cared for the seven Beneficent Immortals,(102) and this he must teach to all people.(103)

(102) Ahura Mazdā is regarded as the seventh *aməša.spənta.*
(103) *Šnš. suppl texts.* 15.5-6.

ABBREVIATIONS

Av.	Avestan
A.W.N.	*Ardā Wirāz Nāmag*
Boyce, *History*	M. Boyce, *A History of Zoroastrianism*, vols. 1 and 2
Boyce, *Stronghold*	M. Boyce, *A Persian Stronghold of Zoroastrianism*
Boyce, *Zoroastrians*	M. Boyce, *Zoroastrians: Their Religious Beliefs and Practices*
BSOAS	*Bulletin of the School of Oriental and African Studies* (London)
D.	Dari
Dd.	*Dādestān ī Dēnīg*
Dk.	*Dēnkard*; DKM: Ed, D.M. Madan
G.A.	*Gizistag ī Abāliš*
GBd.	*Greater Budahišn*
Grk.	Greek
Lt.	Latin
M.M.P.	Manichaean Middle Persian
Modi, *C.C.*	J.J. Modi, *The Religious Ceremonies and Customs of the Parsees*
N.	*Nīrangistān*
N.M.	*Nāmagīhā ī Manuščihr*
N.P.	New Persian
O.P.	Old Persian
P.	Parthian

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PGj.	Parsi Gujarati; it includes loan-words, used by the Parsis, primarily from New Persian
Phl.	Pahlavi
Phl. R. AF and FS	*Pahlavi Rivāyat of Ādur Farnbāg and Farnbāg Srōš*; BTA: ed., B.T. Anklesaria
Phl. R. Dd.	*Pahlavi Rivāyat Accompanying the Dādestān ī Dēnīg*
Phl. Texys	J. Jamasp Asana, *Pahlavi Texts*
P.R.	*Persian Rivāyats,* U: ed., Unvala, D: transl., Dabhar
Pz.	Pazand
R.E.A.	*Ṛivāyat ī Ēmēd ī Aŝawahistān*
Sns.	*Šāyest nē Šāyest*
Supp. texts to Sns.	*Supplementary Texts to Sayest ṇe Sayest*
SGW.	*Škand Gumānīg Wīzār*
Vd.	*Vidēvdāt, Vendidād*
Yasna.	*Yasna*
Yt.	*Yašt*
ZXA.	*Zand ī Xwurdag Abestāg*; ed., Dhabhar
( )	Parentheses in the translations indicate additions by the transaltor to clarify the meaning.
[ ]	Brackets-the translations indicate explanations.

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ASPECTS OF RITUAL PLOUGHING IN INDIA AND ITS POSSIBLE EXTERNAL AFFINITIES

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The author examines ritual ploughing in India and finds that the Indo-European basis has been influenced by other cultures.

The inspiration for this paper came from a re-reading of J. Pätzold's highly informative essay on funeral rites as they are reflected in the archaeological data from Northwest European sites. Since he turned to the Indian tradition preserved in Sanskrit records I became curious regarding the wider Indian context of funeral customs, and ritual ploughing in India, as well as with the possible affinities for the customs among other peoples of Eurasia.

Examining the Sanskrit sources and with archaeological and anthropological material from India and the outside world, I therefore propose to examine the following issues:

1. Ritual ploughing at funeral rites
2. Ritual ploughing pertaining to the building of temples
3. Ritual ploughing at founding villages or towns
4. Ritual ploughing as a fertility rite
5. Ritual ploughing as an agricultural operation among the Indo-Aryan settlers in India: the problem of origins

1. Pätzold's excellent review is based on thirty-four sites from Germany, the Netherlands, Denmark and Iceland. He properly said that the underlying idea of ritual ploughing and sowing at funerals rested on the beliefs (Pätzold, 1960: 231; cf. Thieme, 1952: 50) of prehistoric cultivators who looked at the soil — the place where things had an ever-recuring rebirth — as the field of death. Pätzold had a good command of the archaeological evidence and he was right as far as he went, using the results achieved by Caland in the subject (cf. Caland, 1896: 147-148). However, some additional comments are in order.

Starting with material drawn from other Indo-European cultures, I have to mention the information given in the Hittite documents from Bogažköy from the 17th-14th centuries B.C. Hittite texts tell us that officiators at funeral rites drew a line with a plough on the tenth day of the ceremony (Otten, 1958: 15).

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Returning to the Indian data, I would add the following instructions concerning the selection and preparation of the place of burial to the material contained in Caland's pioneering study. The burial place must be unseen from the village and the soil must be interwoven by roots, but free from thorns. Performers of the burial ritual drew a furrow, sprinkled the soil with water and sowed various seeds in it (*Śatapathabrāhmaṇa* II, 5, 2, 48; cf. Oldenberg, 1923: 582-583). The construction of graves from the Upper Vedic period has been recorded in contemporary texts: the place of the grave was first surrounded by unburnt bricks or stones and then ploughed and sowed with grain seeds mixed with sesame (Rau, 1983: 39). That ploughing at funerals was a common practice in this period can be seen from numerous texts on Vedic ritual (Gonda, 1980: 428). Houses are often compared with tombs in Sanskrit literature (*Rigveda* IV, 28, 3; VII, 89, 1.). Both houses and tombs must be laid only on fertile soil which is capable of bearing fruit. It is noteworthy that the Scythian *tumuli* from the Kuban basin took after the tent of nomadic peoples and that they were erected on virgin soil which had been cleared (Rostovtzeff, 1922: 45-46). This "Scythian type" burial was known in China in the *Shang* period (17th-11th century B.C.), and the tradition was found in East Asia before the Scythian period (Ecsedy, 1983: 148).

In India, *tumuli* have been found that served as graves for high-ranking persons in the 5th century B.C. and the ashes of Buddha may have been placed in one such monument (Franz, 1956: 17).

It is a pity that now we cannot trace the possible links between Vedic royal tombs and subsequent burial practices and Buddhist *stupas* because of gaps in the archaeological evidence. The etymology of the word *stūpa* also points to another direction (cf. Rau, 1983: 39 note 183). For the moment one can only guess that ploughing and levelling might have preceeded the actual building of *tumuli* in India, and possibly in other regions of Asia, as the Scythian examples suggest.

2. The site of auspicious germination has remained an indispensable requirement for building sacred objects since the "germination of seeds leads to a fulfilment of all potentialities likewise the temple that grows from the *garbha* (germ) absorbs the essence of the earth and transmutes it" (Kramrisch, 1980: 15). Sanskrit treatises on architecture from the early medieval

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times prescribe the process of constructing temples almost uniformly: the soil was ploughed, sowed, the unripe grain was grazed by the cattle whose dung and urine further purified the site. The site was then ploughed a second time, after which the ground was levelled and the metaphysical plan of the temple was drawn.

Agnicayana, a rite of piling the fire altar, played a part in Vedic sacrifices. The ground on which the altar was erected was measured with a rope, ploughed and sowed (Sen, 1978: 32). Curiously this ceremony resembled the ploughing at funerals with minor differences. When making furrows here the sacrificer did not lift the plough after completing the single furrows as was done at funerals (Caland, 1896: 147-148).

3. Ritual ploughing at the founding of the city Rome is mentioned in the life history of Romulus (Plutarch, *Vitae Parallelae, Romulus* 11, 2; cf. PW XIX, 1466). This activity cannot be attested in ancient Indian literary sources, although the *Śāsanakaraṇam* 1 18th century Sanskrit work from Orissa says that "before establishing a village the site should be levelled by ploughing and the pits etc. be filled up." (*Śāsanakaraṇam* I, 2 = Tripathi 1978). One should keep in mind that this comment must have been based upon long tradition.

4. Ritual ploughing as a fertility rite occurs in different from both in India and Eurasia. Here I want to treat two main types.

A. The first ploughing at the commencement of the agricultural season was accompanied by definite rituals. Early medieval Sanskrit texts such as *Nīlamatapurāṇa* or the *Kṛṣiparāśara* give record of the ceremony at length. In many parts of India this was the duty of the landlord (Crooke, 1936: 251), and modern instances suggest that it was performed by the king or a dignitary equivalent to the head of the state. *Halakarṣaṇa* (first ploughing) was made by the president of India at Śāntiniketan in 1980 (*The Sunday Statesman*, August 10, 1980), and the custom probably goes back to ancient times.

There is as much debated relief from Bodh-Gayā, dated the 2nd century B.C. (Cunningham, 1892: Pl. 8. Fig. 11), which represents a man ploughing. The younger Buddhist tradition ascribes the representation to the act of ritual ploughing and sowing (Horsch, 1964: 180), and says that the cultivator is Buddha's father Śuddhodana himself i.e. a royal person. However, others express the opinion that the scene represents

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a common cultivator, and the interpretation remains open (Schlingloff).

Evidence from outside India provides us with rich material. Chinese accounts speak of the king as the executor of the ritual ploughing at the beinning of the agricultural year. The same ceremony was repeated by high-ranking officials of the respective districts or villages (Maspero, 1965: 187 ff.). Symbolical ploughing of a magical character was a widespread phenomenon in Europe (Ujváry, 1969: 119-120). Commonly it was associated witht festivals at the end of the winter, but with the Slavs the ceremony of drawing a plough along the street of the village was confined to the New Year's Day (Propp, 1963: 50). Antecedents of symbolical ploughing are found also among the Greeks, Romans and ancient Germans.

B. It has been assumed that ploughing was everywhere associated with sexual intercourse. Sanskrit *langala-* means both "plough" and "penis" (Gonda, 1954: 133). A pictural representation from Cyprus shows naked men ploughing and, the Roman Cincinnatus is said to have been naked while ploughing, but there is no positive ground to suppose that nakedness had any religious connotation in these cases (PW, XIX, 1472). On the other hand, relatively modern Indian practice bears the testimony of magic power produced by naked women ploughing the ground in order to terminate a dry spell during a famine, and there was a custom in Russia according to which naked women drew a furrow round the village for the sake of procuring rain (Penzer, 1968: II, 117-118).

C. A peculiar ceremony in Hindu marriages falls in the category of magic enacted for the promotion of fertility, when the bride and bridgegroom plough furrows at the marriage ceremony (Crooke, 1926: 245). It is a popular custom that the bride's father brings a tray full of small models of agricultural implements during the reception held in his house (Stevenson, 1971: 72). The customs could derive from the idea that the plough and the ploughshare are emblems of prosperity (Bloomfield, 1897: 609).

5. Finally I would like to quote a very significant passage from Pätzold's paper. He says:

> . . . über lange Zeiträme hinweg, nämlich seit der Jungsteinzeit bis in die Eisenzeit, als auch über sehr weite Gebiete hinweg, von Nordwesteuropa hin bis nach Indien, rituelles Pflügen beim vorgeschichtlichen Totenkult eine

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> beachtliche Rolle gespielt hat, also Pflügen bzw. Bodenbearbeitung ohne jegliche praktische oder wirtschaftliche Bedeutung dafür aber von ausgesprochenen symbolhaften Charakter (Pätzold, 1960: 189).

This is true of the Indo-Aryan newcomers in India, too. They may have borrowed from the IE heritage as well as from the heritage of Asia, besides which they had had a considerable knowledge of the practical use of the plough. A meticulous examination of the Sanskrit terms relating to ploughing and their cognates in IE languages point to this direction (Wojtilla). Anyhow, the existence of a twofold role of ploughing among the Indo-Aryans suggests that we should not overestimate the non-Aryan influence in Vedic economy. While not overlooking the existence of developed agriculture amongst certain of the pre-Aryan peoples in India, we should take a balanced view of the evidence. There is no doubt about the agricultural skills of the Indo-Europeans in Europe (Ujváry, 1969: 205-209) or in India, and the cultural synthesis between Aryans and non-Aryans took place only in the Upper Vedic and post-Vedic period.

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THE TRUE RUNES OF THE FIRST WORD: MEDIEVAL SCANDINAVIAN VIEWS ON RELIABILITY AND TRUTH OF ORAL TRADITIONS

PETER BUCHHOLZ
University of Pretoria

The history of saga research has shown that it is only seldom possible to obtain results as to the ultimate historicity of events described in Old Norse-Old Icelandic literature. It is now realized that this is due to the nature of the sources as oral tradition, more or less adapted to appeal to contemporary medieval Christian conceptions. The old heroes had to burn in Hell, which would have been somewhat difficult to visualize if they had never lived. Concrete "proofs" of their existence were also quoted or handed down. To Christian medieval Scandinavians, the concept of truth seems to be best rendered by M.J. Steblin-Kamenskij's concept of "syncretic truth", although his arguments leading to that concept are not all equally valid. The ultimate guarantee of truth, was revelation by what might be called supernatural tradition-bearers.

What is Truth? The Biblical text considers it unnecessary to provide an immediate answer to this question, asked, as it is, by a non-believer. Nineteenth and twentieth century historical research used to have quite a straightforward operational definition, which is perhaps well summarized in the famous words of Leopold Ranke "wie es wirklich gewesen". What is valuable in this concept is the recognition of the relation truth must have to reality, a relation also evident in St. Thomas' "veritas est adaequatio rei et intellectus". By including the "intellect" in his definition, the saintly scholar was almost already as advanced as the most modern philosophical thinking, which recognizes truth as dependent on history and the human mind in its historical manifestation. As far as I can see, this concept has not yet exerted any direct influence on historical literary or folk narrative research. As Knut Liestøl already recognized, the impasse reached by the stubborn search for an eighth to eleventh century historical reality behind the Old Icelandic sagas did quite independently lead to some new thinking in saga research, as is evident in the work of scholars like Theodore Andersson, Kurt Schier, or Dietrich Hofmann, to mention but a few. The realization that most – if not all – sagas use some orally transmitted material or are even based on such material, quite naturally led to the discovery that the Old Norse "saga man" had more or less the same degree of liberty in

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dealing with his sources as many storytellers in other cultures had, without intending to deviate deliberately from the truth as they understood it. The predominantly oral culture of medieval Scandinavia did not in fact provide any means by which the truth of historical traditions could be controlled as strictly as in modern historical research.

This is probably one of the reasons why the general tendency to believe, rather than to doubt, was considerably greater than later, after the spread of literacy. The tradition-bearers tried to integrate what they had heard or perhaps read, or even seen, concerning the pagan age and its heroes, into the Christian system of belief, which was itself to a degree based on oral traditions, and which contained the supernatural and miraculous as a supreme manifestation of reality and truth, as well as the Devil's power to produce illusions (ON *sjónhverfingar*). In this respect, Old Norse culture was not much different from Old Irish with its perhaps even greater wealth of oral stories and poetry. St. Patrick, the apostle of Ireland, was, according to a twelfth century source (*Acallámh na Senorach* "colloquy of the ancient men"), most eager to obtain information about the pagan heroes of Ireland's old saga cycles (the CuChulainn and Finn cycles) – incidentally, quite in the footsteps of earlier Irish storytellers, for whom knowledge of the landmarks associated with the deeds and death of the heroes was prescribed. What did the saint do to obtain such information? According to our sources two survivors of the old heroic age are assumed to have lived on for some 200 years, long enough to meet the saint and tell him all he wanted to know, and to be baptized and rescued from Hell:

> Just then Patrick was chanting the Lord's order of the canon, and lauded the Creator, and pronounced a benefiction on the rath (i.e. fortified place) where Finn mac Cumhaill had been, the rath of Drum Derg. The clerics saw Cailte and his band draw near them; and fear fell upon them before the tall men with their huge wolf-dogs that accompanied them, for they were not people of one epoch or of one time with the clergy.
>
> Then Heaven's distinguished one, that pillar of dignity and angel on earth, Calpurn's son Patrick, apostile of the Gael, rose and took the sprinkler to sprinkle holy water on the great men; floating over whom until that day there had been and were now a thousand legions of demons. Into the

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hills and brushwood, into the outer borders of the region and of the country, the demons departed forthwith in all directions; after which the enormous men sat down.

Good now, said Patrick to Cailte, what name has thou? (Cross & Slover, *Ancient Irish Tales*, 459)

Somewhat later, Patrick even obtains heavenly approval for his curiosity:

There they were until the morrow's morning came, when Patrick robed himself and emerged upon the green; together with his three score priests, three score psalmodists, and holy bishops three score as well, that with him spread faith and piety throughout Ireland. Patrick's two guardian angels came to him now – Aibellan and Solusbretach, of whom he inquired whether in God's sight it were convenient for him to listen to stories of the *fian*. With equal emphasis, and concordantly, the angels answered Him, 'Holy cleric, no more than a third part of their stories do those ancient warriors tell, by reason of forgetfulness and lack of memory; but by thee be it written on tables of poets, and in learned men's words; for to the companies and nobles of the later time to give ear to these stories will be a pastime.' Which said, the angel departed." (Cross & Slover, *Ancient Irish Tales*, 464).

The medieval belief, in Christian Ireland, as well as in Scandinavia, was that the old heroes had indeed lived and were now burning in Hell. A fourteenth century Icelandic manuscript, the *Flateyjarbok* (ed. Christiania, 1860, 416-418, Porsteins p. skelks) contains a story about an Icelander at the court of the Norwegian missionary king, Olaf Tryggvason (end of tenth century), who defies the king's warning and visits his great hall at night. He is promptly visited himself by a ghost from hell. Here is what happens:

Where do you come from, Thorsteinn asked. He answered, straight from Hell. What can you tell me about it, Thorsteinn asked. Who endures the torments of hell best? Nobody endures them better, the devil said, than Sigurd, the slayer of Fafnir. What kind of punishment does he suffer? He is poking a fiery oven, the fiend replied. That does not seem so great a punishment, Thorsteinn remarked. This is not quite accurate though, the devil said, for he himself is the poker. This is indeed something, Thorsteinn replied, and who endures hell's torments most miserably?

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> The fiend replied: Starkad the old is the most miserable sufferer, and he howls at us devils. This is a greater torment than everything else, and we cannot escape from his howling. What kind of punishment is this, Thorsteinn said, that he takes so badly, considering all the tales about his valiance. The fire reaches his ankles. That does not seem so bad, for the hero that he was. That is not quite the case, the devil said, because the soles of his feet are the only parts outside the fire. Formidable, Thorsteinn replied. Do please once howl like him. So be it, the devil said. Then he opened his jaws and emitted a terrible yelling. Thorsteinn covered his ears with his coat. That howling distressed him down rather deeply and he said: Does he always howl like that? Oh no, the fiend reples. These are only the lamentations of our lower class of sub-devils." (translated by P. Buchholz)

Thorsteinn still insists on further demonstrations, and finally the devil intensifies his wailful sounds up to Starkad's ultimate howling, produced with great effect and rolling eyes. Thorsteinn faints. Luckily, a bell rings just in time, and that is a sound no devil can stand. So he vanishes into the soil – the customary way of disappearing for such creatures in Old Norse literature.

The ancient heroes are generally believed to have been of gigantic stature. Large bones were often presented as "proof" of this. Snorri Sturluson and Saxo Grammaticus were convinced of the former existence of giants; Saxo even referring to megaliths in this connection (Vorz. 82-84). Skaldic poetry apparently enjoyed a high degree of trustworthiness, and is often quoted as proof of the accompanying saga prose. Possibly it was already realized at an early time that their involved word order and metric rules (cf. Kuhn) protected those poem from radical changes. Poems were regarded as eyewitness accounts, or accounts as pronounced by the heroes themselves – shortly before their death or before fighting an adversary. As such, they were considered authentic and reliable, even if they were Eddic and not Skaldic. Other "proofs" of authenticity were landmarks, especially graves (as in Ireland), a weapon or a ring supposedly from a hero's possession and probably transmitted as a family heirloom, and even a tooth, tongue, or a single hair (Vorz, note 175). Stench of such a relic is so unbearable that it kills several bystanders, according to the Christian chronicler, Saxo, Book 14 (Vorz. 48). No wonder: this was a special hair

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from the underworld, extracted from the subterranean giant and demon Utgarthilocus.

Although the general rule was belief rather than disbelief, the advent and spread of literacy and of higher education were responsible for a certain amount of skepticism, particularly with regard to the numerous wondrous and supernatural elements in the so-called mythical-heroic sagas. Such skepticism is sometimes expressed in saga prologues that leave it to the listener or reader whether to believe the stories or not. It is, however, pointed out that many things may have been possible in ancient times and far-off regions, and that in any case, nothing is impossible for God. The supernatural is indeed considered as natural, as part of existence, as it evident from an investigation of the hero's biography in mythical-heroic sagas, for instance (Vorz. 79-111). Add to this the dialectics of stability and variability so well known to folklorists (but not so much to medievalists, unfortunately), together with the claim to validity which the results of human reason had for medieval thinking, and which provided justification for the saga teller's procedure of combining bits of oral information, and perhaps of his own speculation, into a coherent whole. The result is a complex concept of truth behind medieval Scandinavian storytelling and writing, which might indeed be termed "syncretic truth" with M.I. Steblin-Kamenskij. The flaws in Steblin-Kamenskij's book (Vorz. 115-117), and especially in his conception of a fundamental "otherness" of medieval man, should not detract from the considerable merits of the concept of "syncretic truth" for saga research, because that concept pinpoints the attitude of a predominantly oral culture towards its own traditions, i.e. its "Geschichtsbild" and "Geschichtsbewusstsein". There cannot be any doubt that "historical consciousness" is culturally of fundament importance. In very ancient times, this historical consciousness seems to have been embodied in what might be called supernatural tradition-bearers. Latter-day grandchildren of such beings are the heroes who tell their stories to St. Patrick, or the 300-years-old Nornagest with his "eye-witness account" of Sigurd and Brynhild (Vorz. 48f.). To listen to a mound-dweller (ON *haughbúi*) speaking from his grave, or to a wooden statue (*tremaðr*) telling its exploits, is, however, probably an early kind of "experience" possibly acquired in a state of ecstasy. The volva (*seeress*) in Voluspa has seen all the nine worlds and is therefore able to reveal the past and future.

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This figure, incidentally, seems to have climbed down into earth on a magical ladder (Scham. 54-56). This Germanic prototype of a supernatural tradition-bearer, however, is the god Oðin, father of poetry and of magic. He consults not only the dead, but even Mim's head at the roots of the world ash;

Pá malti Mims hofuð
frǫðlict iþ fyrsta orð
oc sagði sanna stafi. (Sd 14)

"then Mim's head said wisely the first word, and pronounced true runes".

This trait is certainly extremely old. We not only find it prominently in Celtic belief, but it may even go back to mesolithic cult practices connected, perhaps, with a belief that the head was the receptacle of the unseen and, thus, of possible revelations. It is highly significant that, in extreme situations, help had to be obtained through contact with the beyond and with the past at the same time. That the past and the beyond were consulted when all other remedies failed, is in effect a supreme proof of the belief in the truth and efficacy of the traditional answers thus obtained. The ultimate guarantee of truth is supernatural revelation. This has the highest place in the hierarchy of things, and thus further confirms the central position of religion in archaic societies.

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MEN AMONG MONSTERS: GERMANIC ANIMAL ART AS EVIDENCE OF ORAL LITERATURE

STEPHEN O. GLOSECKI
University of Alabama

Although Scandinavian and Germanic pagan mythology epics were only recorded in writing during Christian times, evidence of the true, pagan, oral literature does survive in graphic form on metal, wood and stone. Thus the Torslunda dies, for example, are important evidence of the reality of the pagan mythos.

This paper has two main points: Germanic bards made songs before they began to record them in Roman letters; Germanic animal art reflects the themes of the preliterary songs. Heroes depicted in carving and casting parallel heroes described in song and story. Action scenes like those on the sixth century Torslunda dies look like *illustrations* – these men in motion imply an associated "text," a traditional plot line that made their poses intelligible, their stories transmissible.

And parts of the old plots survived to influence stories after the Christian mission brought Roman writing to Germanic poets. Characters like Beowulf and Sigurð did not conveniently materialize when writing became available to record their exploits. The hero who reaches us with the name *Beowulf* wears a boar crest and kills a dragon: significantly, the boar guardian, depicted on a Torslungda die, reflects tribal lore current as early as the time of Tacitus. And in the animal art no motif is more common than the writhing worm. So Beowulf's headgear stems from a time when men still believed in the boar protector, before monastic teaching permeated Germanic culture. And his dragon reflects a stock motif widely known to preliterary artists, who depicted the *wyrm* in durable media destined to outlast the ephemeral productions of contemporary storytellers.

Both art forms, poetic and graphic, reflect the turbulent spirit of the Iron Age, when the ultimate artistic ideal was the strongest man fighting the strongest foe. Plot lines that made it to parchment echo the old ideal by pitting men against monsters: Beowulf against trolls and a nameless dragon, Sigurð against Fafnir, Gunnar against serpents, Grettir against the bear, the *draugr*, the troll-wife, the giant. These men and their monsters were the stock-in-trade of artist and artisan alike; the model for bard and craftsman both was the warrior hero, master

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of monsters, whose character reached writing through mythic tales transmitted in traditional songs.

And we know such songs existed, if only because Tacitus and Bede both say so, one in the early dawning, the other in the lingering twilight of the great pre-Viking Migrations. Bede, of course, writes that Cædmon's friends sang secular songs, while Tacitus says that poetry was widely known among the Germans, whose warriors chanted verses on the brink of battle. More than a millenium later, Snorri confirms this custom when he writes that Óláf's skald sang the lost lay *Bjarkamál* at dawn before the battle of Stiklastaðir. Snorri thus shows that the custom of singing heroic songs before a fight persisted from the time of Tacitus to the time of Óláf, from 98 to 1030 A.D., from an unlettered to a lettered era (v. *Heimskringla: Óláfs saga helga* ch. 220).

And the *Bjarkamál* suggests the subject matter of the songs — exploits of culture heroes — for in the Norse tradition Bjarki is the ultimate role model, the Lancelot of Hrólf's court, the champion most fearless, most formidable, most famous. Best known from *Hrólfs Saga*, Bjarki is a monster-killer and a bear's son, interlaced with beasts, like his Old English analogue Beowulf. Like the boar, the bear was once a creature of power; traces of his importance remain in Bjarki's overt and Beowulf's obscure ursine associations. Superimposing the culture hero upon the creature of power is typically tribal, therefore probably preliterary.

Archaeology makes the bear's importance obvious. In 1984 a bear's dog tooth was dug up in Orkney; dated to the eighth century, the tooth was intended as a talisman, although its owner did not finish piercing its base. Talismanic bear designs arise elsewhere in Germanic art, too. And bearskins, bear claws, and clay models of bear claws all appear in Migration-age graves. So in preliterary Germanic society the bear had ceremonial importance, also suggested by the name of the site where the Torslunda dies turned up: *Björnhövda* "Bear's-head." This importance left its mark on the bear hero, who can hardly have originated in written texts because the record shows that bear lore had its heyday before Roman writing entered Germanic culture, and also because Snorri specifically refers to an oral version of the Bjarki story. Lost legends of bear heroes prefigured Beowulf and Bjarki, whose ursine traits link them to preliterary prototypes.

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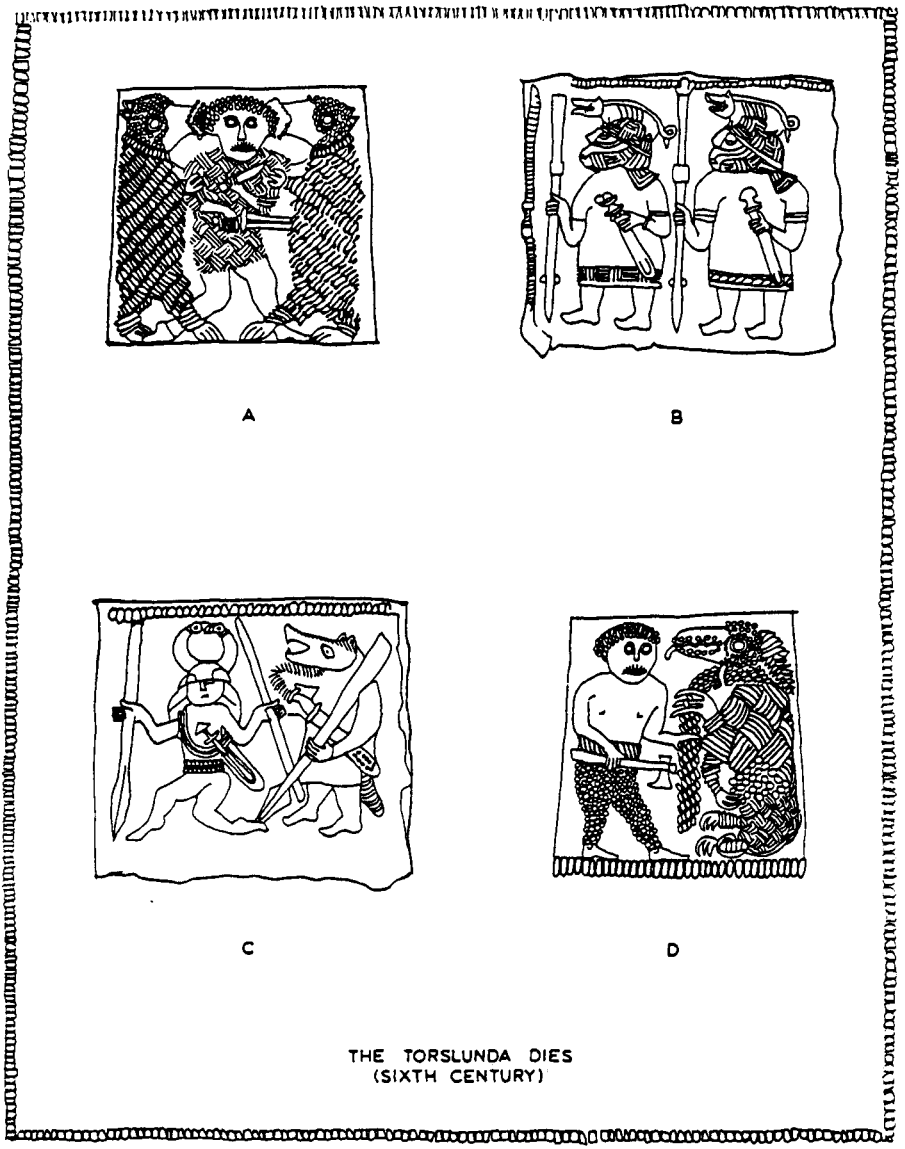

Fig. 1 (Torslunda dies): after Bruce-Mitford, *Aspects of Anglo-Saxon Archaeology*, plates 57-59.

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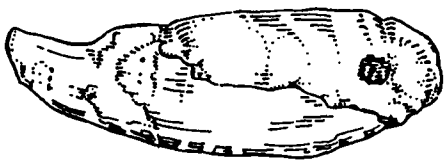
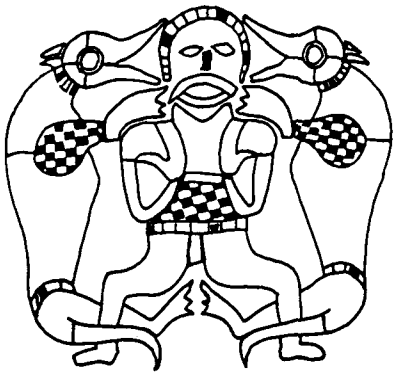


BEAR'S CANINE: SANDAY, ORKNEY (NINTH-CENTURY SITE)

Fig. 2 (bear's canine): after Hunter, *Archaeology Extra* (University of Bradford, Spring 1984), page 4, column 2.



PURSE-TOP PLAQUE, SUTTON HOO (SEVENTH CENTURY)

Fig. 3 (Sutton Hoo plaque): after sketches done in the British Museum, with reference to Bruce-Mitford, *The Sutton Hoo Ship Burial*, page 104.

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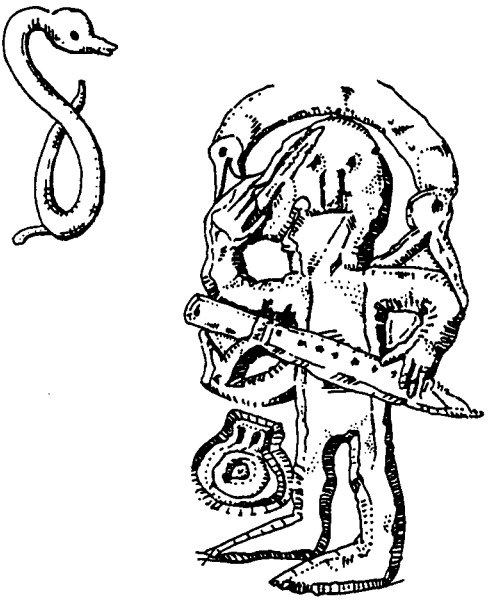

Fig. 4 (detail, Gallehus horn): after Stjerna, *Essays on Questions Connected with the Old English Poem of Beowulf*, figure 52 (cf. Shetelig, *Scandinavian Archaeology*, plate 36). Figure 4, (Frankish stele): after Wilson, ed., *The Northern World*, page 54.

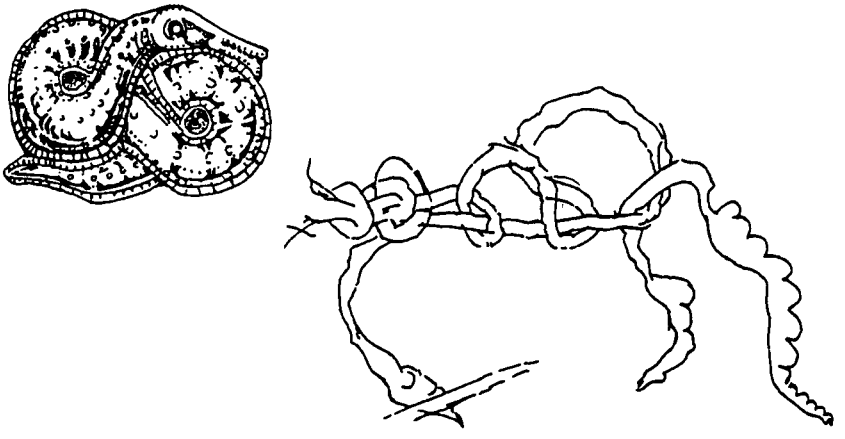

Fig. 5 (bronze fibula): after Stjerna, figure 55. Fig. 5 (Maes Howe petroglyph): after sketches done *in situ*, with reference to Crown-copyright photograph A2663/34, supplied by the Scottish Development Department, Edinburgh.

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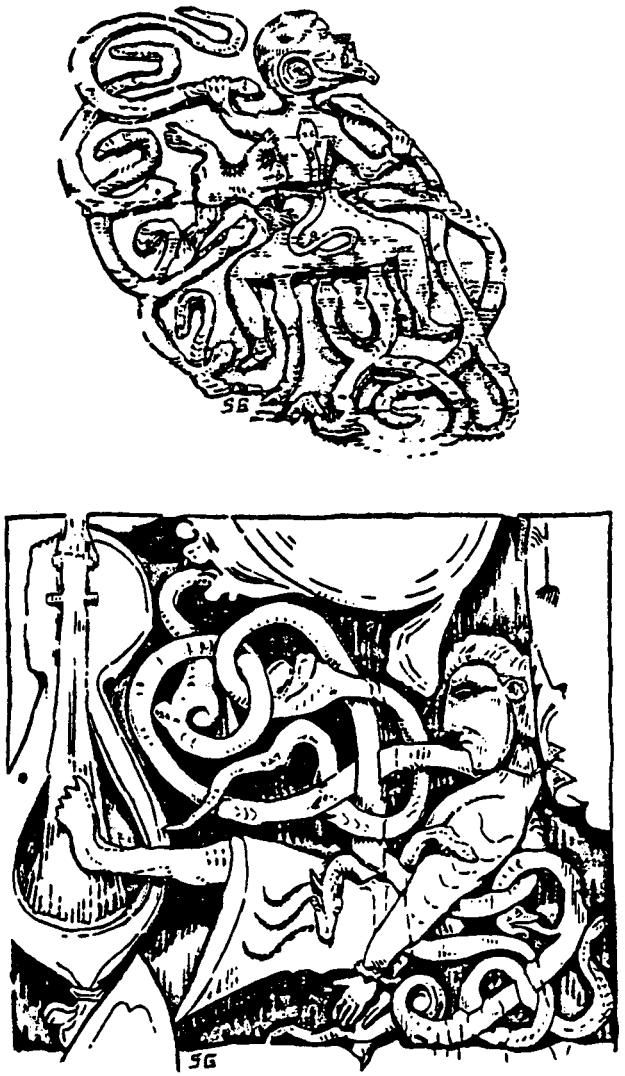

Fig. 6 (detail, Oseberg cart): after Almgren, et al., *The Viking*, page 236. Fig. 6 (detail, Hylestad church portal): after Forman in Magnussen, *Viking*, page 123.

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One such hero stares out at us from the most famous Torslunda die, locked between bears in the whispering-beast design. Returning his gaze, we might wonder who he is, how he got here, why, where, when he tackles such impossible odds — we might ask all the questions reporters quickly learn. The answers would amount to a plot, for this man's predicament implies a plot, and the only effective way to develop such a plot is with words, in a heroic story, a song of the sort mentioned by Snorri, Tacitus, and Bede. Thus the two art forms, poetic and graphic, coalesce. All alone, this hero takes on two bears; singlehandedly, Grettir fights a bear, too, and proves his strength while he retraces the old plot line.

Directly related to the Torslunda design, two celebrated plaques from Sutton Hoo put wolves rather than bears around the hero, thus suggesting the same sort of explanatory text — a poetic "illustration" of the graphic scene. These men between bears and men between wolves parallel the *berserkir* and *úlfheðnar*, the bear and wolf warriors romanticized in the sagas, who influenced Old English poetic diction, too, for words that originally meant "bear" and "wolf" — *beorn* and *wælwulf*.— mean "warrior hero" in the verse. This wolf warrior dimly reflected in the literature looms up on another Torslunda die, where a wolf-headed man — brandishing spear and sword, probably howling — consorts with an armed dancer in a horned helmet.

The horned dancer shows up in the Sutton Hoo hoard, too, along with Vendel-style interlace, where snake shapes suggest the *wyrm* subdued by Beowulf or Sigurð. The serpent comes early and stays late; the motif is common by the Migration period, still popular after the Viking Age. It appears all over the Germanic world; the examples shown here, dating from the fifth to the twelfth century, are from Schleswig, the Rhineland, Oland, and Orkney. The Orcadian serpent was carved by a twelfth-century traveler weathering a storm inside Maes Howe, Britain's best-known chambered barrow. Apparently, the man cut rock to kill time, his mind settled on a subject automatically available, obsessively common in the art of the age. The *wyrm* captured and kept the Germanic imagination. My point, of course, is that graphic design parallels poetic plot line, that man met *wyrm* in songs sung before Roman writing was around to record them.

One such story bridges the gap between preliterary and

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literary periods. These two Norwegian woodcarvings (fig. 6) show the same stretch of plot line, although the first is ninth century, therefore pagan and preliterary, while the second is twelfth century, therefore Christian and literary. The carvings celebrate man among monsters, hero against serpents: Gunnar Gjukisson, Sigurð's brother-in-law, thrown to the snakes by Attila, plays his harp in the Hylestad carving, just as he does in both Icelandic *Eddas*. The widespread Sigurð cycle — mentioned in *Beowulf*, retold in *Vǫlsunga Saga* and the *Eddas*, reworked in *The Nibelungenlied* — must have moved through the Germanic world with the migrating tribes before their bards learned to put poems on parchment.

It is simply a quirk of history that graphic work in metal, stone, and wood survives, whereas the work of the unlettered poet has, unavoidably, been lost to us — except insofar as old plots entered new poems when the Germanic cultures of the Middle Ages accommodated their rich ancestral mythos to the literary tradition nurtured by the learned monks. Produced in the Germanic milieu well before writing took root, the earliest figural artifacts — the Sutton Hoo plaques, the Torslunda dies — are the most important evidence of an associated oral tradition. Rarely, the men among monsters illustrate actual episodes from stories we still know. But even in the absence of any obvious link between a certain carving and a particular legend, these men among monsters all by themselves practically sing their own song. They imply their own plots — verbal "illustrations," coexistent stories celebrating the same mythic confrontations. So legends pitting the hero against the beast did not spring forth fully blown the moment the monks set foot in the Germanic kingdoms. They had a long prehistory, as the animal art implies.

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CLASSICAL BUSTS, HERMAI AND STATUES AS A SOURCE OF ANTHROPOLOGICAL DATA

R. PETERSON

The author of *The Classical World* assesses the utility of clay death masks, and metal and stone hermae, busts and statues as a source of data concerning the anthropology of the population of Republican and Imperial Rome.

Several attempts have been made to determine the physical anthropology of the early Greeks and Romans on the basis of the sparse skeletal evidence available. Some early research was made by pioneers such as Ripley (*The Races of Europe,* 1899), Schuchhardt (*Alteuropa,* 1926), and J.L. Myres (*Who were the Greeks?* 1930). More recently Carleton Coon (*The Races of Europe,* 1954) and Lawrence Angel (*A Racial Analysis of the Ancient Greeks,* 1944; *Race, Type and Ethnic Group in Ancient Greece,* 1946; and *The People of Lerna,* 1971) have added considerable information. In the last of the three books which Angel published on this subject, he gave a detailed report on the numerous skeletal remains which he excavated at Lerna, and concluded that the several different cemeteries indicated two elements in the population of Lerna: an autochthonous population and an immigrant people, which latter he identified as Greek. Most of the Greek remains he classified generally as "Nordic", suggesting that they had originated in the Danubian area, but within these there was a minority element which he classed as "Iranic". He thought that the latter probably reflected the genetic influence of a separate Indo-European immigration, from Anatolia, of another branch of the Indo-European peoples who originated (as other writers frequently suppose the Indo-Europeans may have originated) on the Pontic steppes.

In *The Classical World* (Cliveden Press, 1985) I have surveyed the physical anthropology of the Greeks and Romans on the basis of the evidence left to us by sculptors, and urged that closer attention should be given to the study of death masks, busts and hermae dating from the classical period of Greek and Roman civilization for this purpose. Unfortunately the only evidence of death masks to survive to us, in the form of bronze or metal casts made from the clay originals, is very sparse, but busts and hermae are plentiful. However, there are some reserv-

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ations as to the utility of these latter. Too many of the Greek hermae, especially, are copies of originals which have been lost. Secondly, many would object that the sculptors idealized their subjects, attributing to them features which were considered to be desirable. Thirdly, Greek artistic techniques especially were subject to art fashions, with the result that artificial interpretations and treatments of the physical features varied from one period to another.

However, in so far as the problem of the accuracy of copies is concerned, we find that a very substantial likeness links busts and portraits that purport to represent the same subject, and artists appear to have attempted to produce an accurate replica when making copies from an original work. This resemblance is often strong enough to permit the identification of the subject in cases where the sculpture bears no name and all records are lost, and this suggests that the copies were reasonably faithful, thus largely negating our first reservation. It is also known that copiers used sophisticated measuring techniques to ensure the accuracy of their copies.

So far as the second reservation is concerned, although it is possible that the early sculptors may to some extent have idealized the aristocratic features of the noblemen they were portraying, any exaggeration in this direction would merely serve to emphasize what they regarded as the characteristic physiognomy of a pure-born Greek *aristoi*. In short, they would emphasize what they regarded as the distinguishing features of the Greek aristocracy. In the case of the Romans, however, we shall see that the tendency to flatter appears to have been strong only in the period of the later Empire.

Finally, the close similarity of appearance which marks the hermae of Greek aristocrats as a class during the Classical Period, should not be casually attributed solely to artistic convention – the entirely different features revealed in hermae representing the non-aristocratic Socrates, for example, destroys such reasoning. The membership of a small, genetically inbreeding aristocratic class of related families, such as constituted the Greek ruling class, must necessarily have resulted in a higher degree of facial similarity, and an identical observation would also apply to the Patrican families of early Rome. The physiological diversity which characterizes the upper classes of modern Western countries (but not of those countries which

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still practice cousin marriage) is a far different thing from the genetic homogeneity which must have prevailed within the close inbreeding classes in the ancient world, and we should not make the error of assuming that Greek aristocratic society, or Roman Patrician society, was as diverse in physical appearance as are the peoples of any one class in modern America.

The Origins of the Romans

The people who eventually conquered and subjugated the latter-day Greeks were themselves quite closely related to the early Greeks. In temperament, the Romans were perhaps somewhat different – more akin to the Dorians than to the Athenians. Yet their language was a member of the same family of Indo-European tongues to which the Greek language belonged, and their gods were analogous to those of the Greeks, even before they began to borrow heavily from the rich mythology and literature of Greece. The essence of Roman religion was to be found in ancestor worship and the identification of the state with the family, viz. the concept of the city-state as essentially a family of families, bound together by ancestor worship, with the state having its own family hearth fire, tended by the vestal virgins, in the same way that adult daughters of the family tended the sacred fire of the family. As Fustel de Coulanges first pointed out, and scholars such as Dumezil have subsequently clarified in greater detail, Roman and Greek ethics and religious values were closely similar.

Proto-historic Roman society seems to have been organized on the same lines as early Greek society, comprising a royal family, from which kings were elected by the freemen, a body of nobles (originally clan chiefs), and the body of freemen, each of whom was the head of a household, and who was bound by ancient custom to serve in the army whenever the nation was threatened. Indeed, if we could successfully disentangle Etruscan influences, the earliest evidence we have of Roman society suggests a picture that was remarkably parallel to that of the Homeric Greeks, from whose social system the evolution of royal Sparta and of republican Athens can be easily traced via disparate processes of social evolution.

Linguistically, the Latin tongue was a form of Italic which included a few words of Etruscan and Mediterranean provenance. The Italic languages comprised Latin, Faliscan, Oscan and Umbrian, and were spoken by a closely related group of

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peoples found in early historic times in Central Italy, just south-east of Etruria. Indeed, the Faliscan, Oscan and Umbrian Italic-speaking peoples were early recognized by the laws of connubium to be legitimate marriage partners for Romans.

Among the closest relatives of the Italic-speaking peoples were the Celts, and it has been suggested that the Celtic and Italic languages only separated around 1000-1200 years B.C. Parallels between the pantheon and social ideologies of the Celts and Romans are also apparent and may explain why the Celts of Gaul and Iberia so readily accepted cultural Romanization after their subjugation. To these Celts, the Roman culture was essentially little more than a more sophisticated version of their own culture — one which had the immense advantage of possessing a written language. They understood and empathized with Latin culture and Latin religion, because of its close affinities to their own ancestral beliefs and attitudes. Indeed, the linguistic and cultural ties between the Romans and the Celtics are confirmed by the archeological evidence for the origins of the Italic and Celtic peoples, and are also reflected in the realm of physical anthropology. As is now well-established, the origins of the proto-Celts are to be found in the area of the Northern Rhine and Upper Danube — immediately north of the Alps. Growing out of the Urnfield culture, the Hallstatt Iron Age proved to be a period of innovation, and the Upper Danube a womb from which the Celtic and Italic cultures seem to have sprung.

Moving westwards from the Upper Danube area, perhaps as early as 1100 B.C., the Celts spread from what is now Bavaria and the Upper Rhineland, through Western Switzerland (where they left us rich evidence of the famed La Tène culture), into what was later to be known as Gaul from the Gaulish speaking settlers who spread right down into the Iberian peninsula, later penetrating even northwestern Italy (Cisalpine Gaul). Others (the Brythonic-speaking Celts) moved northwest and west into the Low Countries and the British Isles.

It was probably around the time of the establishment of the La Tene culture that other inheritors of the Hallstatt tradition moved southwards, probably through Carolia and Carinthia, into Northern Italy. Here they have been associated archaeologically with the Terramare peoples, and the Villanovians, who practised the same body-burning habits as did the early Celts,

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and unfortunately left us, in consequence, with very few skeletal remains from which we can identify them physiologically. Culturally, however, the continuity appears to be clear, and the early settlements of the Terramare people in Northern Italy were laid out in the same rectangular street patterns which characterized Roman military camps in later centuries.

Genetic Continuity and Modification

The precise physical anthropology of the proto-Italic peoples is difficult to ascertain with certainty, because of their practice of cremation. The type of the Hallstatt peoples of the Upper Danubian valley has been precisely defined from the cemeteries at Hallstatt and elsewhere. In general they were uniformly a relatively light-boned, dolichocephalic, leptorrhine stock of ultimately Cro-Magnon origin. However, in the Alps immediately south of this Upper Danubian area, we find a more mesocephalic and brachycephalic population which is presumed to reflect a survival element from a heavier-boned Cro-Magnon variant. Thus the Celts of Western Switzerland, like those of Gaul, may well have acquired some of the tendencies towards broad-headedness (evidenced from skeletal remains as well as from the work of classical sculptors) as a result of genetic influences acquired at the time of their westward migration along the northerly borders of the Alps. Not all Celts in historical times revealed this quality. Those such as the Belgae, whose ancestors presumably migrated down the Rhine without entering the Alps, were more dolichocephalic, being particularly favored by Caesar for his triumphs because of their classic Hallstatt-type features and light hair color.

Since the ancestors of the Italic-speakers who entered Italy presumably migrated through the Alpine regions which separate the Upper Danube from the North Italian plains, it is not surprising that we find a tendency towards mesocephalic or, more rarely, brachycephalic measurements among the Italic peoples. Essentially Hallstatt in type, with strong features and aquiline noses, the Romans, as portrayed in death masks and busts and as revealed to us by skeletal evidence, frequently exhibit a broader face than is common amongst the Greeks, the Celts or the Germanic peoples.

The total number of crania surviving from early proto-Italic

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populations is small. Two crania from Remedello are clearly dolichocephalic and belonged to individuals of a stature of 168 centimeters. Two early skeletons from Republican Rome are also dolichocephalic, being virtually identical to Hallstatt skeletons from the Lower Bavarian area. Another, from an early pre-Republican cemetery, closely resembles that of Christian Romans from the early Imperial period, and also resembles the crania of Celts from the Marne area in Northern France, being somewhat mesocephalic in type, but still leptorrhine.

In the case of the early Romans, it is customary to assume that some admixture with Etruscans may have taken place during the period of Etruscan domination. However, the conventions governing choice of marital partners in those days were different from those of modern societies, and this supposition should not be accepted unquestioningly. Linguistic borrowing could readily have occurred with a minimum of genetic exchange. Furthermore, the subsequent amalgamation of the Italic peoples under Roman leadership led to marriages between Romans and other Italic nations (as in the period of the Sabine Wars) and many of the Patrician families of Republican Rome were of Oscan or Umbrian origin. Thus any Etruscan influence on the Romans during the period of Tarquin rule would have been diluted in Republican times by subsequent intermarriage between Romans and Italic peoples who had not been exposed to Etruscan contacts.

From a genetic point of view, a more significant potential for change could have arisen from the mingling of genes between the Patrician Romans, of true Italic provenance, with the genes of the Plebeians who are supposed – though without proof – to have been of partially autochthonous Mediterranean derivation. While skeletal differences between Hallstatt and Mediterranean physical types are slight (both being of dolichocephalic Cro-Magnon provenance), and difficult to identify, evidence of differences in hair and eye coloring is clear from literary sources, and the Patricans are portrayed as generally fairer than the early Plebs, thus giving rise to the logical and geographically reasonable supposition of Mediterranean influences among the Plebs. Following the relaxation of laws against intermarriage between the classes, a considerable degree of gene flow from the Patrician families into the more successful Plebeian families seems to have taken place. Some reverse

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gene flow might be assumed, though this may well have been reduced by a desire for exclusivity amongst the Patricians. Amongst a lineage-conscious people such as the Romans of the early Republican period, it was one thing to give a daughter in marriage to a wealthy Plebeian family, but another to take a wife from such a background. Like the Celts, the Germans or other Indo-European peoples (such as the Iranians and the Indo-Aryans) the Romans were always concerned about the social status of the mother's family, despite their patrilineal traditions. Thus it seems likely that during the period of the Republic the gene flow from Patrician families to Plebeian families was stronger than from Plebeians to Patricians.

Evidence of the Roman physical type has also been drawn from the remains of Romans who died in various parts of the Empire. Thus, four burials in York, in England, reveal the remains of Roman officers who were essentially homogeneous in type. All were dolicho- or mesocephalic, with slightly broad foreheads, pronouncedly aquiline noses, and relatively square faces. The skulls of two Roman officers found in Bath and Gloucester, and also of one at Lincoln, are similar in type to these. A group of eight Roman crania from the Rhine are almost identical to those remains found in Britain, and with those of eight males in Rome in the Christian period. According to Carleton Coon, these remains "although few, are so alike that we must conclude that the Romans, however mixed, had formed a characteristic local or national physical type, which was mainly of Italic origin, and closely related originally to the Celts." Literary evidence similarly gives us some idea as to the coloring of eyes, hair and skin of the original Romans, in so far as we may assume that the descriptions of their gods and heroes to some extent reflect a memory of the idealized ancestral type. Thus, Vergil, in the *Aeneid*, refers to the god Mercury, and to Lavinia, Turnus, and Camillus, as 'golden-haired'.

The History of Roman Portraiture

The city of Rome appears from archeological evidence to have been established during the first half of the eighth century B.C. According to legend, it was founded by Romulus, in the year known to us as 753 B.C. Prior to their eventual conversion to Christianity, the Romans dated their calendar from the year of the founding of the city, and thus the dates given to us by

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tradition are quite precise. Rome prospered under its kings until the year 616 B.C., when it was conquered by neighboring Etruscans. For nearly a century — or full three generations, from 616 to 510 B.C. — the city lived under the rule of alien Etruscan kings. When freedom was regained under the leadership of Brutus, the reinstatement of the kingship seemed inappropriate, since kings were not so much civil rulers as magico-religious figures — bringers of good luck — and a dynasty that had been dishonored by the loss of the kingdom could hardly be reinstated. Instead the *regia* or powers of the kingship were entrusted to two consuls, elected annually by the body of the men entitled and liable to undertake military service in the defense of the nation — as represented by the *comitia centuriata* — with the Senate (comprising the heads of the major Patrician families) holding prime authority. The system of dual consuls, exercising the powers of *regia*, parallels the dual kingship of ancient Sparta and of certain of the Gaulish Celtic peoples.

The early city of Rome has been described as a somewhat grim place, lacking in great works of architecture or statuary. Its temples were adorned with the emblems and trophies of war, with only a few images of the gods, mostly made from terra-cotta, though some bronze figures are reported at an early date. Because the ritual of ancestor worship and of homage to the city (as representing the nation-state), and respect for the *pater familias*, played a more essential role in the organization of Roman society than the propitiation of the gods, the most important function for art at this time was not the embellishment of temples to the gods, but rather the provision of portraiture to record the features of the living for the benefit and inspiration of their descendants. In common with other Indo-European peoples, including the Greeks and Scythians, the Romans customarily made death masks from the faces of their dead, immediately after life had passed from the body, in order to facilitate this social and moral function. These were obtained by placing hot wax over the face, to obtain a mold from which clay impressions could be taken. Until the 2nd century A.D., these death masks were customarily painted to provide a realistic likeness, and thus not only recorded the features with great accuracy, but also gave us a realistic likeness of the color of the hair, eyes and skin. Such paint as remains commonly indicates light complexions with blue or grey eyes, and fair or brown hair.

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The treasured collection of ancestral masks were zealously preserved in the family atrium, where a sacred fire burned on the family altar as a symbolic reflection of the earlier hearth fire so necessarily a part of every home in the ancestral north. On ritual occasions these masks would be displayed, as when after marriage the newly-wed couple spent their first night on the ancestral marriage bed, placed in the atrium, to remind all concerned that marriage was for the divine purpose of procreating the family into eternity. At funerals, these same masks would be worn by family retainers, or hired mourners, thus giving the impression that the ancestors were gathered to listen to the oration recounting the achievements of the deceased, before the body was consigned to its final resting place in the family crypt. Remembering that these masks were closely accurate images of the people whom they represented, the religious, moral and emotional effect must have been impressive.

At a fairly early date, plaster images were found to lack durability, and bronze casts replaced the earlier plaster death masks. This accorded well with the technological love of the Romans for accuracy in representation, so that naturalism continued to dominate Roman portraiture down to the Flavian period. Only after the Antonine period, around 200 A.D., did there arise any tendency towards impressionism in Roman portrait art. In consequence, not only Roman death masks but also even the Roman busts which were introduced to supplement the masks as a means of perpetuating the memory of the dead, may be taken as reliable sources of anthropological knowledge about the physiognomy of those whom they represented.

The importance of these visual images of the ancestors is mentioned by Pliny, who complains about the introduction of foreign artists during his time, and comments: "conditions were different in the atria of our ancestors where it was portraits that were looked at, and not statues by foreign artists, either in bronze or marble. Wax impressions of the face were set out on separate chests, so that they might serve as portraits that were carried in funeral processions, and thus when anyone died, the entire roll of his ancestors, all who ever existed, was present. Genealogical lines of descent, in fact, used to be indicated, running back and forth between painted portraits. The family archive rooms were filled with the scrolls and other records commemorating deeds done during their magistracies. Outside

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the doors around the lintels there were also portraits of these great spirits along with spoils of the enemy fixed in position near them . . . so the house celebrated perpetual triumph."

The spirit of the Roman atrium was much the same as that of the great hall in medieval and post-medieval European mansions, where portraits of the ancestors were supplemented by arms and armor, or military trophies brought home from past campaigns. The only difference was that in pagan Republican Rome these were all a part of the religion of ancestor worship, whereas in Christian times the display of such familial relics represented a somewhat anachronistic survival of pagan ideals under a religion which professed humility, honored an alien god, and whose first converts were commonly slaves. The ancestral traditions therefore survived only among those Patrican families that adhered to their ancient religion, while Christian emperors, inspired by (politically convenient) ideas of universal citizenship and equality under one universal god, sought to suppress the older Roman beliefs.

Following the successful construction of the vast Roman empire, the ranks of the Patricians, heavily thinned in the Punic and other wars, were inadequate to staff the many lucrative administrative positions that had to be filled. As a result many successful aliens, drawn from all parts of the empire, acquired Roman citizenship and rose in rank within Roman society. Thus, from the time of Hadrian onwards, busts were executed not simply to honor the ancestors, gods or military and judicial heroes, but to flatter any successful man or woman, whether they be rich merchants, popular gladiators, or merely sought-after courtesans. Indeed, by the time of the later Empire, busts of gladiators and courtesans were even placed in the temples, alongside the images of the gods, by those who had wealth enough to purchase this privilege.

The Roman Concept of Self

Interestingly, it would seem that even in the days of the Empire, traditional concepts of the "correct" Roman features were popularly equated with honesty and integrity, while irregular features, that is to say, features which did not reflect the traditional concept of the Roman face, were equated with lowness of social background and potential dishonesty. This prejudice is reflected in the proverb 'distortum vultum sequitur

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distortio morum'. Another popular proverb quoted by Horace also reveals what we would today call "racial prejudice" in favor of the ancestral image of the "correct" Roman: 'hic niger est, hunc tu, Romane, caveto!' It has been pointed out that blond wigs were popular amongst the ruling classes in the days of the ethnically heterogeneous later Roman empire, but it cannot be said whether this was due to the tradition equating light coloring with ancient lineage or whether this fashion reflected admiration for the Goths and other Germanic nations who were now dominating powers, pressing so insistently upon the borders of the Roman world. Certainly Juvenal cites Massolina as 'hiding' her black hair under a blond wig, and Herodian tell us how the part-Asian Caracalla also had a penchant for blond wigs – although in his case he seemed to be aping the Goths, in admiration of whom he also frequently attired himself in Teutonic garb!

Further literary evidence of physical imagery is found in Sulla's description of Plutarch as fair-haired and blue-eyed, while Horace's ideal of beauty is fair. Suetonius tells us that Augustus was fair in coloring, with light eyes, as also Galba and Nero. Ovid (himself dark in coloring) was well-known for his sensuous interest in women and speaks with adulation about the blond women known to him. Even in the 4th century A.D., Valentinian I is portrayed as having fair skin, eyes and hair. By this date, however, lighter coloring may well be more due to the admixture of Germans and Gauls in the Roman population (along with other non-Roman peoples) than to the persistence of the physical traits of the Patrician families of the early Republic.

Illustrative Busts

So much for the historical and literary evidence. Now let us sample the record left to us by sculptors.

The first of our illustrations portrays a Patrician holding the death masks of two ancestors. Although this particular sculpture dates only from the 1st century B.C., we feel that it is an appropriate first choice in view of the role of death masks in the history of Roman portraiture and in the religious life of the Roman Patrician classes. Also, the three faces, although showing a family resemblance, are each sufficiently individual to demonstrate that the sculptor was guided by a desire for fidelity. To

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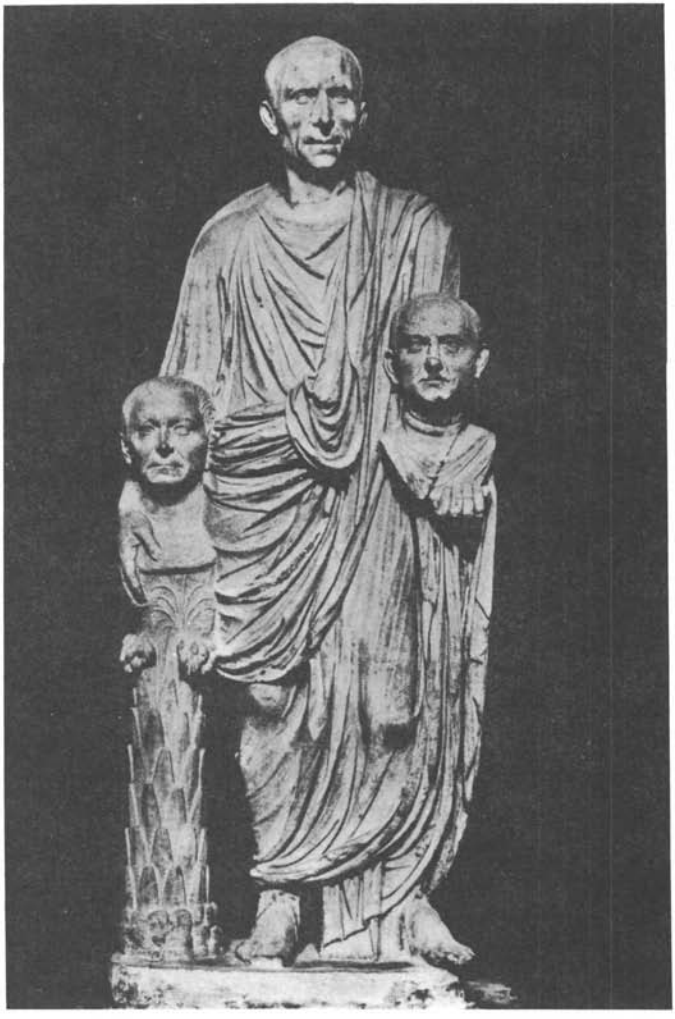

Fig. 1 An early 1st century B.C. statue of a Roman *pater familias* holding ancestral busts. Note differences in the features which imply an emphasis on artistic precision. (Palazzo Barberini, Rome)

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Fig. 2 A Roman Patrician engaged in sacrificial rituals. (Museo Gregoriana Vatican)

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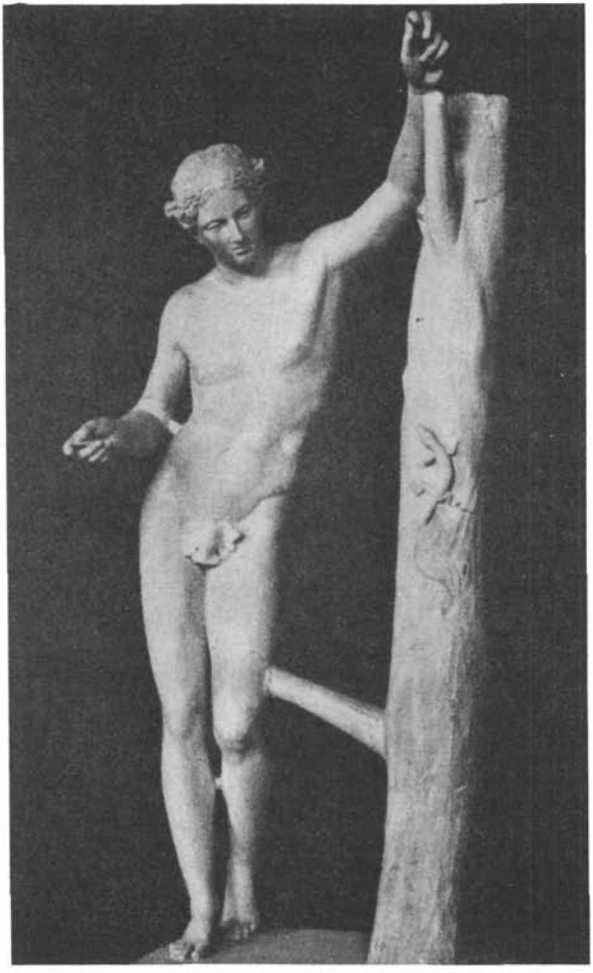

Fig. 3 Statue of Apollo, found on the Palatine Hill, revealing the Roman concept of physical beauty. (Museo Gregoriana Vatican)

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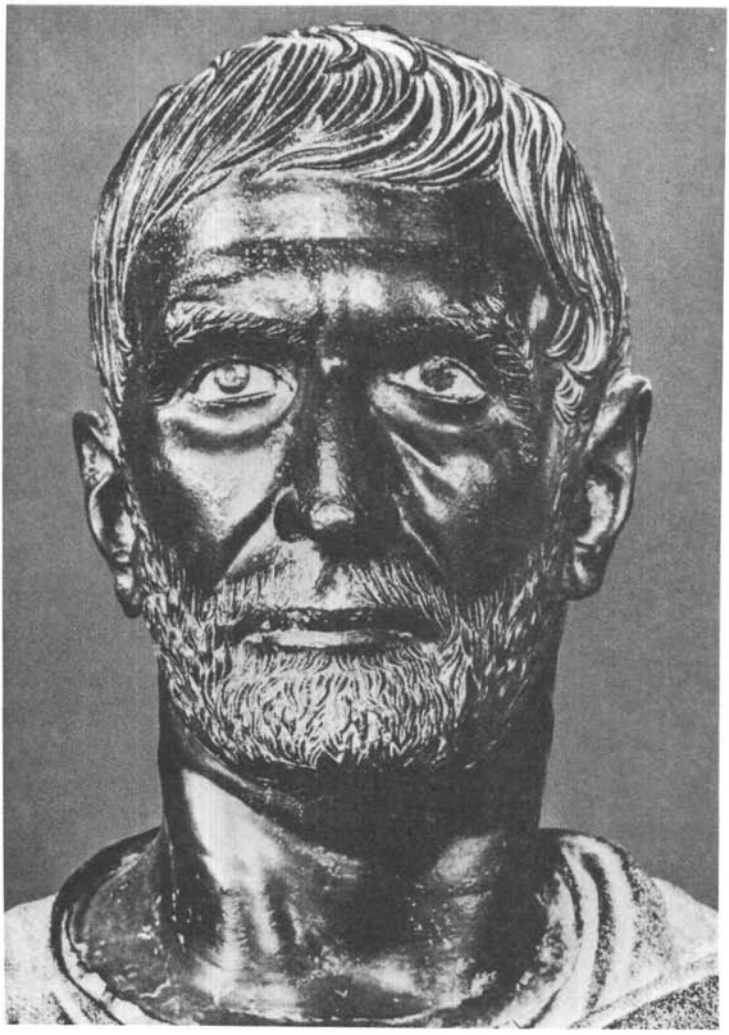

Fig 4 The bronze bust of a Roman from 3rd century B.C. The eyes are made of ivory, with blue glass for the irises. (Palazzo dei Conservatori, Rome)

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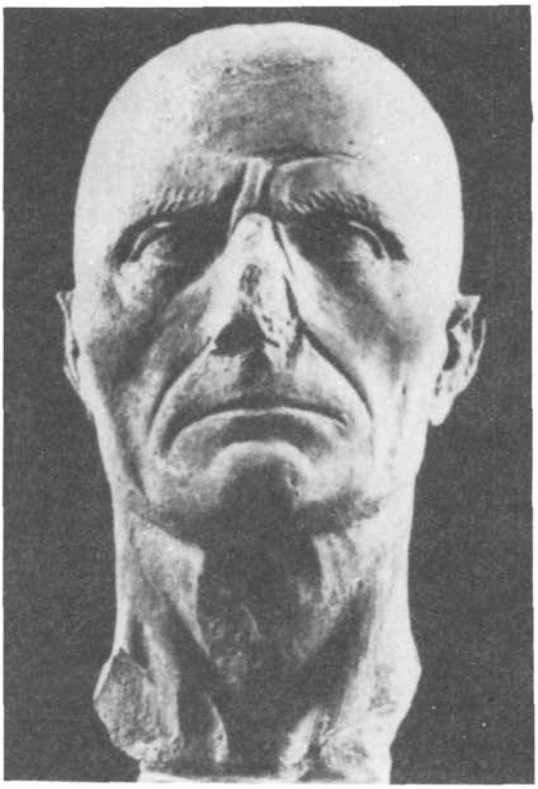

Fig. 5 Terracotta votive head, representing an ancestral figure, circa 2nd century B.C. (German Archaeology Institute, Rome)

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Fig. 6 Terracotta votive head, probably representing a deceased child. (Museo Gregoreana, Vatican)

Fig. 7 A terracotta votive head of a young man.

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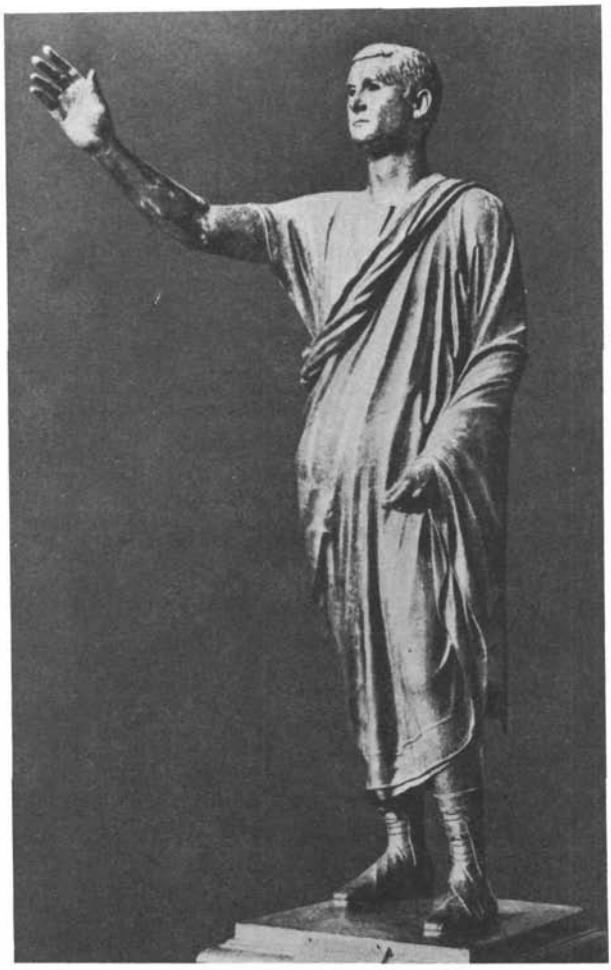

Fig. 8 A bronze figure of a man in the pose of an orator, circa 100 B.C. (Museo Archeologico, Florence)

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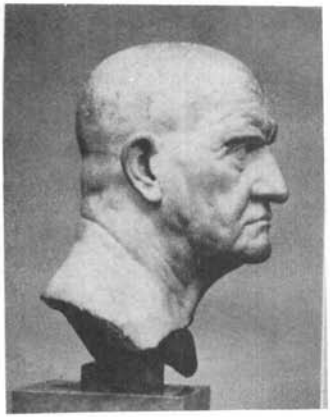

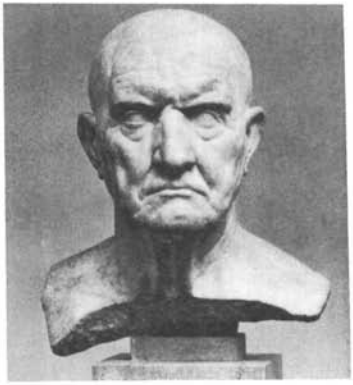

Fig. 9 & 10 A marble bust from 1st century B.C. This illustrates the broad-headed strain apparent in some segments of the Roman population which is suggestive of some degree of Alpine/proto-Italic admixture.

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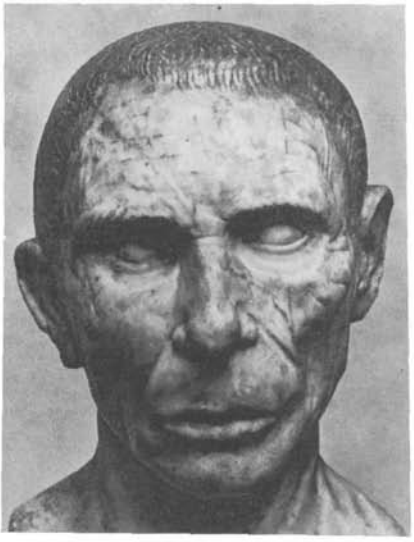

Fig. 11 A marble bust from circa 65 B.C., illustrating a distinctive strain of features frequently found in Roman busts of the Republican era, but less common in those of later centuries. (Staate Kunstsamenlungen, Dresden)

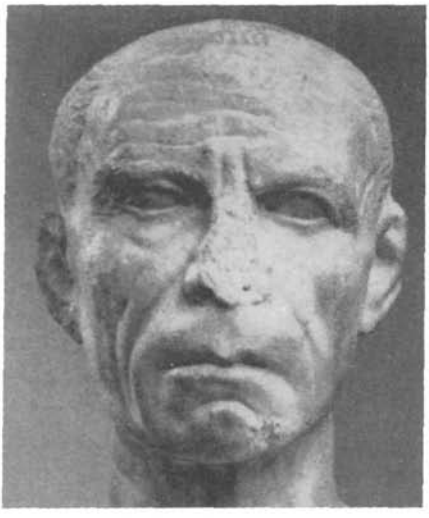

Fig. 12 Another bust of the same period and type as that illustrated in the preceding figure.

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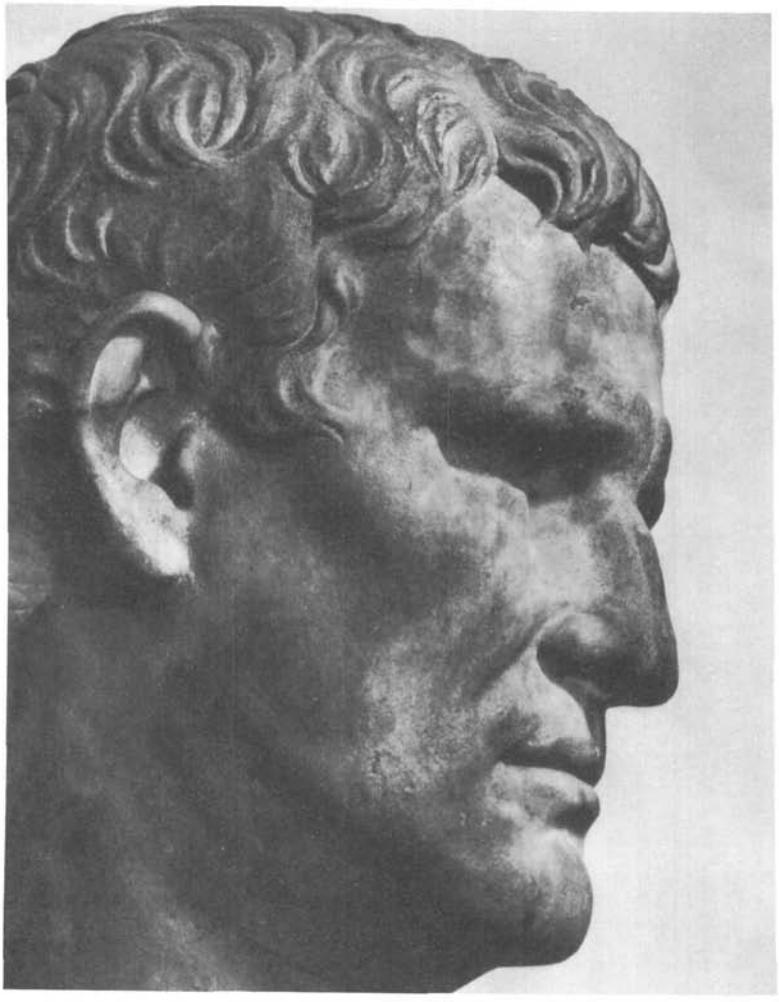

Fig. 13 Marcus Agrippa, 63 B.C.-A.D. 12. Thrice consul of Rome, Agrippa commanded the fleet of Augustus at the battle of Actium, and was responsible for building the Pantheon. (Uffizi, Florence)

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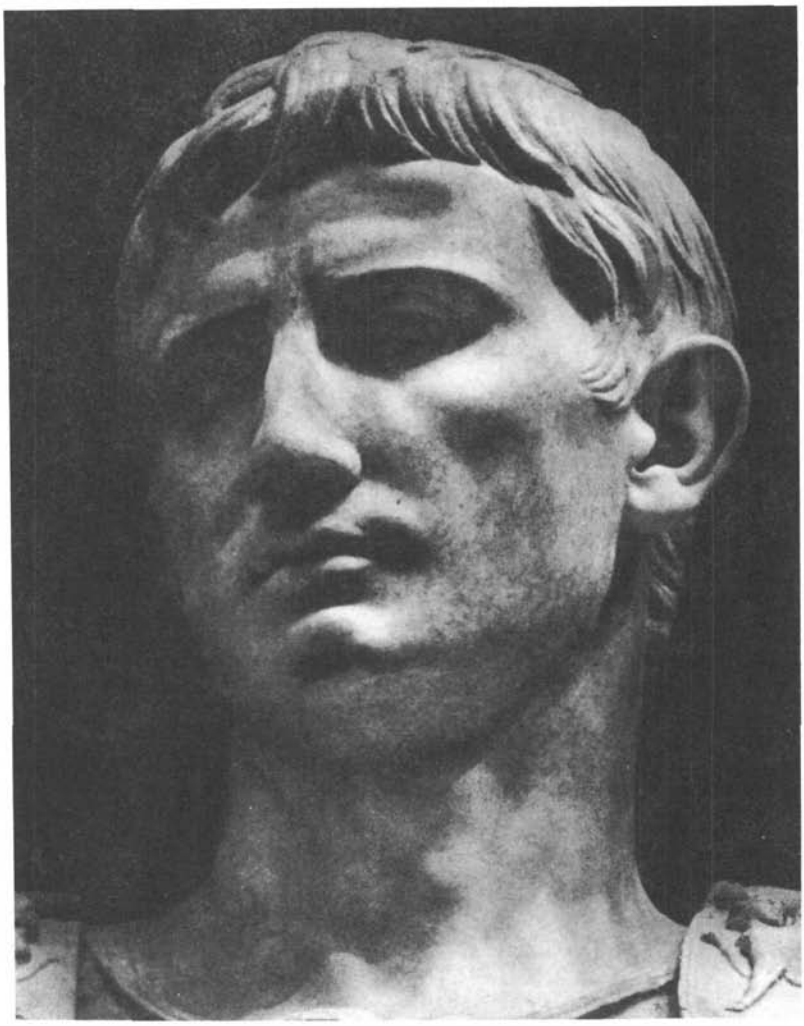

Fig. 14 Augustus Caesar, 63 B.C.-A.D. 12, described as having yellow brown hair and light blue eyes. (Courtesy of Museo Vaticano, Rome)

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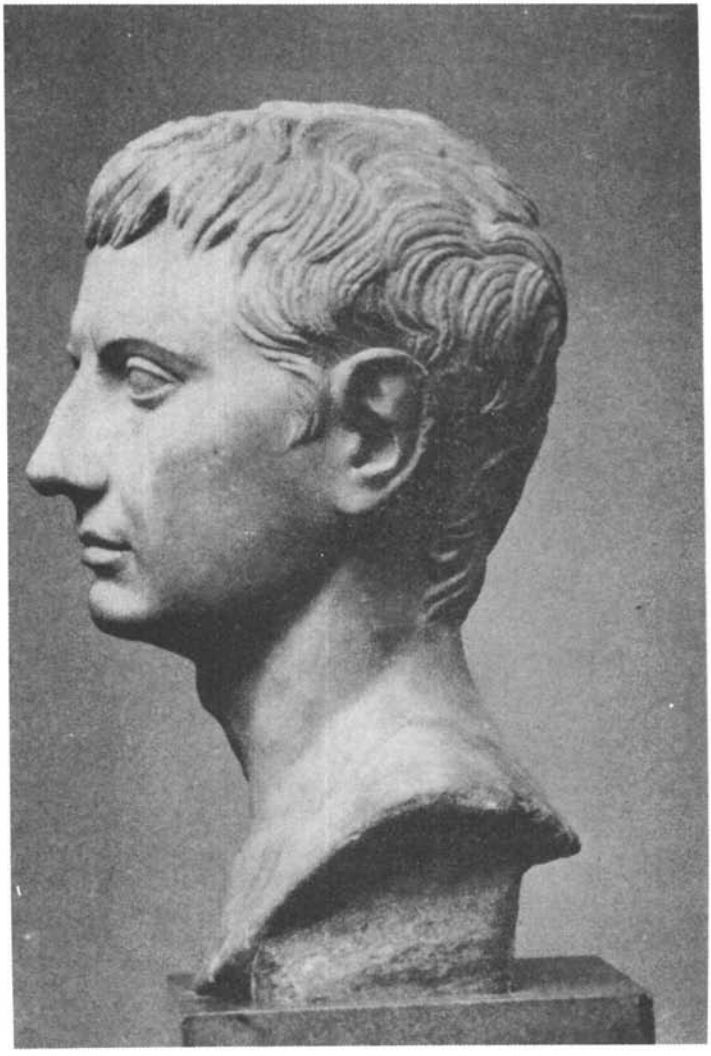

Fig. 15 Profile of Patrician Roman of the early Empire.

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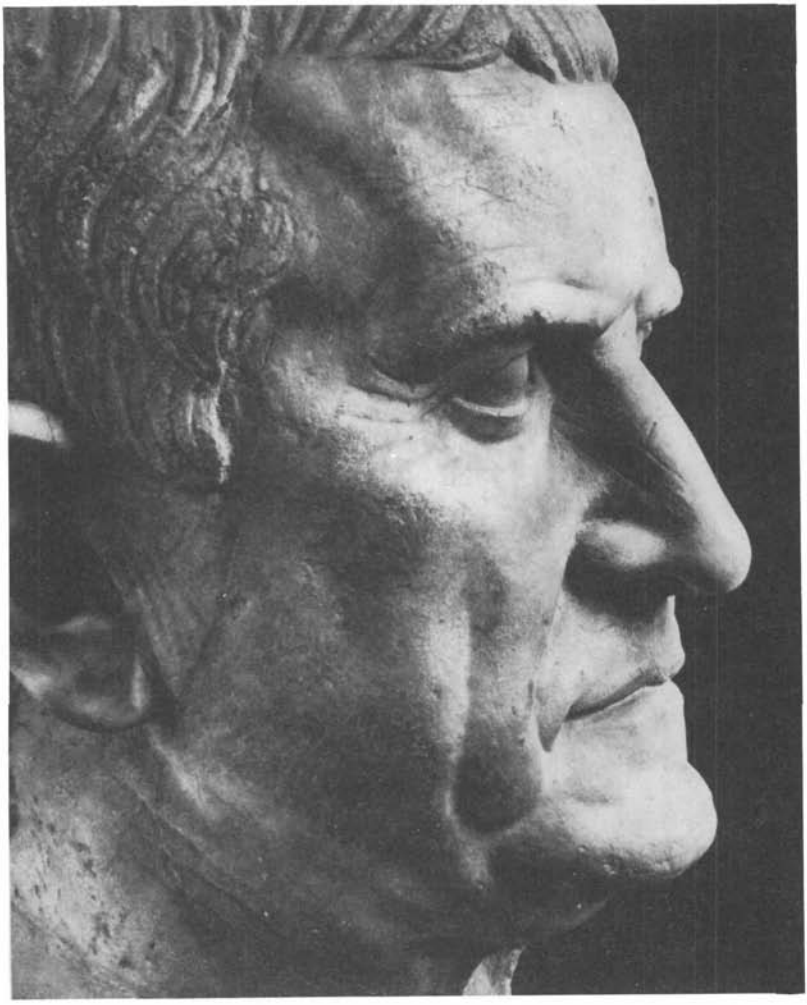

Fig. 16 Servius Galba, Emperor of Rome, A.D. 68-69. The scion of an old patrician family, Galba was highly reputed for his sense of justice, and was elected Emperor to succeed Nero. (Courtesy of Louvre Museum)

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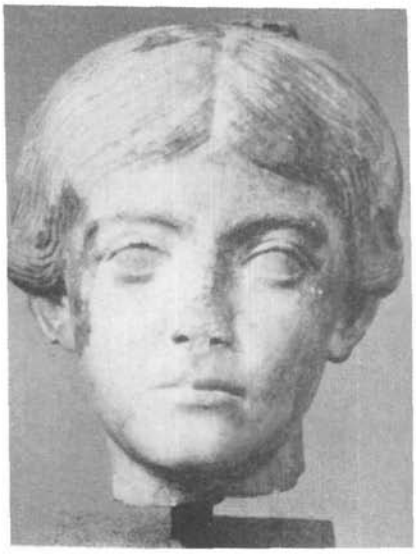

Fig. 17 Marble head of a young woman from a tomb of the Augustan period.

Fig. 18 The Emperor Hadrian (A.D. 117-138), who constructed Hadrian's wall in Britain, and strengthened the Empire's defenses against both external and internal enemies.

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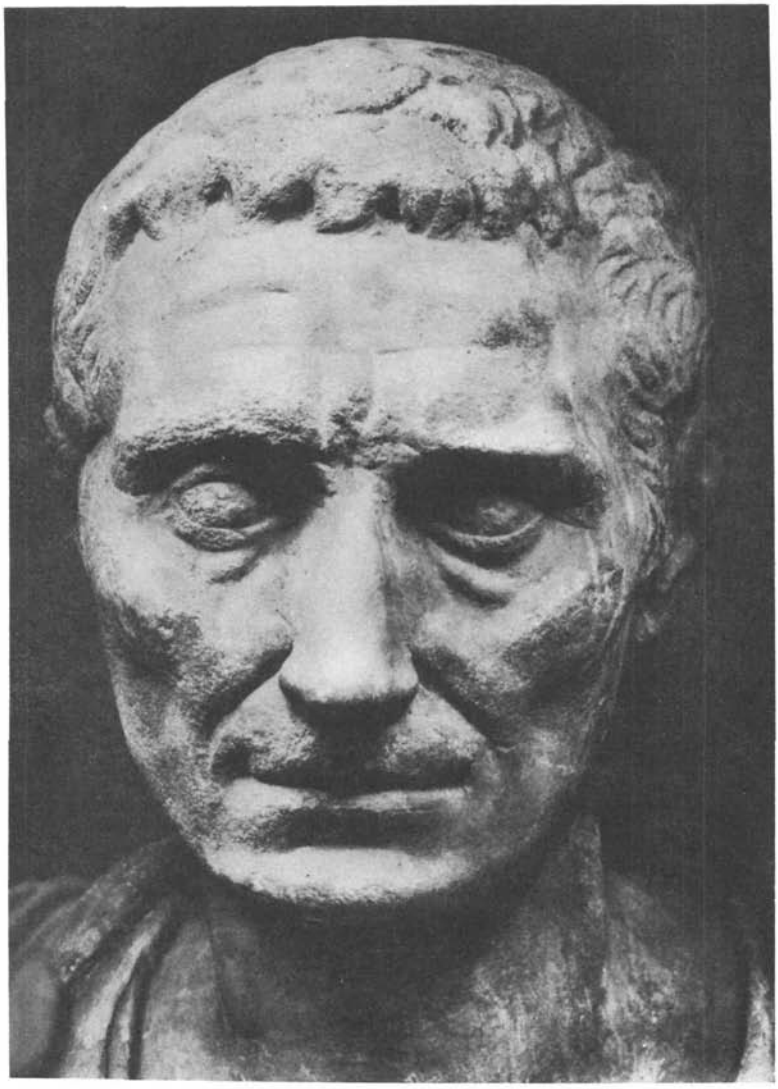

Fig. 19 Male of the early Empire period. (Courtesy of Museo Torlania, Rome)

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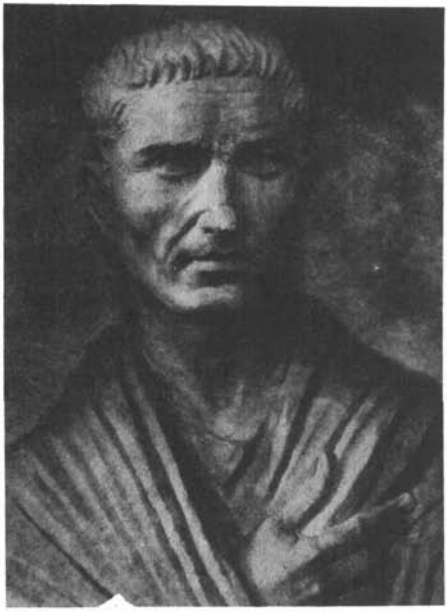

Fig. 20 Tomb relief of male Patrician of the Gens Furia.

Fig. 21 A bronze statue believed to represent Lucius Caesar,

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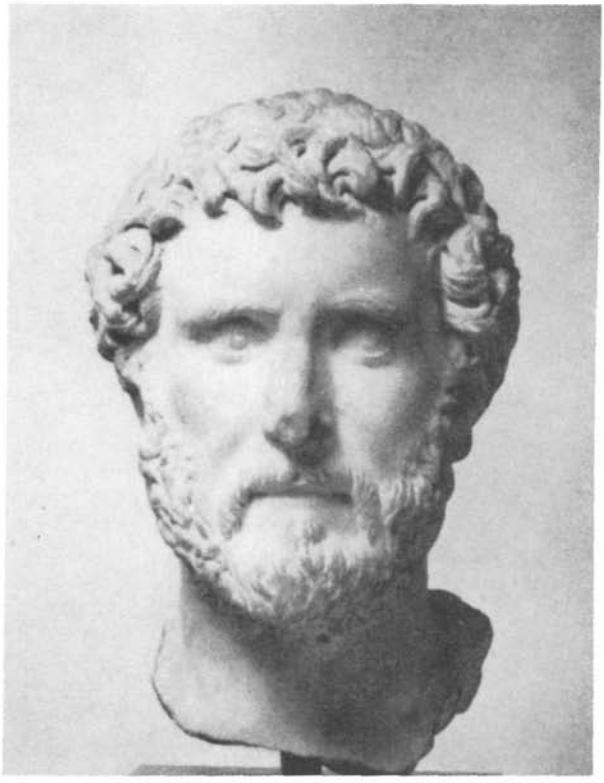

Fig. 22 Antonius Pius (A.D. 138-161), who succeeded Hadrian, and nominated Marcus Aurelius as his heir. He is generally regarded as one of the best of the later Roman emperors.

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Fig 23 Roman bust, circa A.D. 150. (Museo Capitalino, Rome)

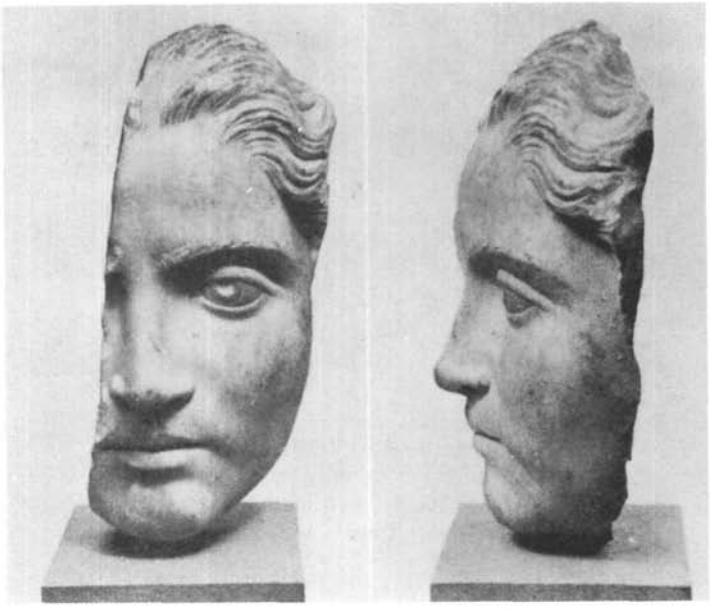

Fig. 24 Head of a girl, circa A.D. 150.

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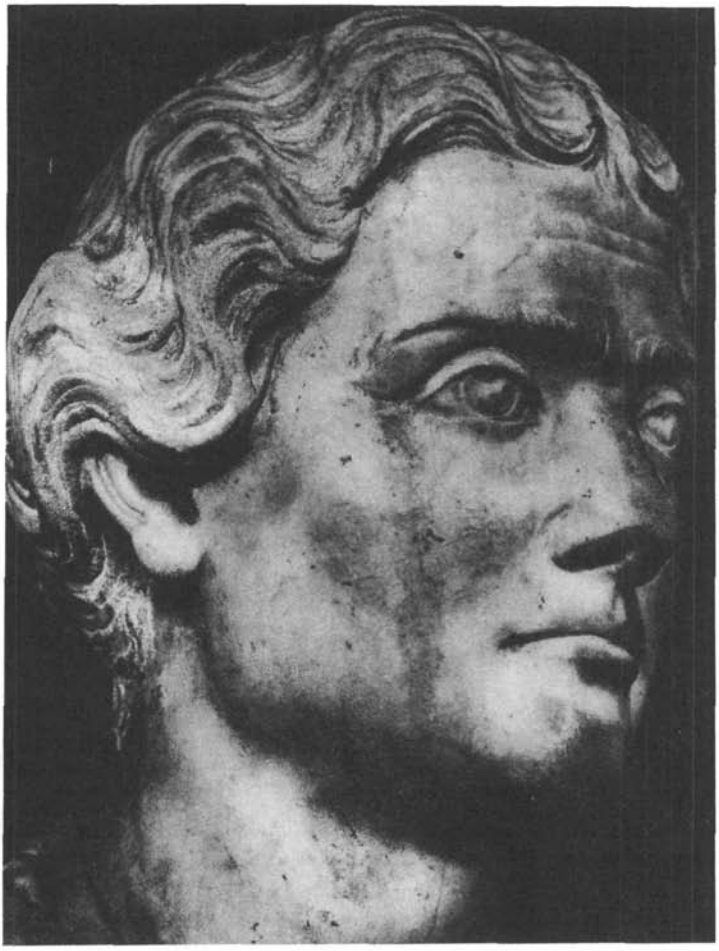

Fig. 26 Head of a priestess, dating from the 2nd century A.D. The office of priest or priestess in the Roman religion was traditionally restricted to specific families of ancient Roman origin. (Courtesy of Louvre Museum)

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Fig. 25 Marble head of a woman, with hairstyle reflecting the fashion of the Flavian period. (Courtesy of the Museo Capitalino, Rome)

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Fig. 27 Bust of an older woman. (Courtesy of Musée d'Art et d'Historie, Geneva)

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further emphasize the social and religious significance of portraiture to the Romans of the Republican period, we have chosen, for our second figure, the statue of a Patrician engaged in religious rituals, holding a flat bowl in his right hand, of a kind used for libations. This, in turn, we have followed with a statue of one of the Roman gods, Apollo (Fig. 3). While this latter was truly a creation of the sculptor's imagination, it may be assumed to reflect the features which the Romans most admired, for there are few nations whose concept of personal beauty does not reflect to some extent the characteristic physiological qualities of their own kind.

Figure 4 represents a bust from the 3rd century B.C., one of the earliest surviving Roman bronzes. The features could easily be those of a Celt or German. The eyes are made of white ivory, inlaid with blue glass to represent the irises. As already mentioned, from the early beginnings of Roman portraiture, busts were often colored, and by the time of Pompey the Roman sculptors had achieved a rigorous realism in their representations of living subjects which matched the accuracy of the waxen death masks, showing even warts and scars while tracing the underlying bone structure with great precision.

Votive heads played an important role in temple worship, and Figures 5 to 7 show us the firm features of an older man, the chubby cheerfulness of a child, and the clean-cut face of a young man. The bronze statue illustrated in Figure 8 represents a Patrician in the act of oration — skill in oratory being an important social grace in Republican Rome. His head, though giving the impression of having been made separately from the body, portrays features similar to those in Figure 4.

Figures 9 and 10 give us two views of a broader-headed Roman, testimony to the prehistory of the proto-Italic peoples. Similarly, Figures 11 and 12 represent two busts made from death masks (for accuracy, the somewhat dour expressions may be a result of death rather than a characteristic of the subjects during their lives), which reveal a common characteristic of Roman physiognomy, e.g. a breadth of head at the level of the brain and cheekbones, combined with a more conventional narrowness of the jaw and chin.

Marcus Agrippa (Figure 13) seems to combine something of the quiet strength of head form, so characteristic of Figures 2 and 8, with the clear-cut features portrayed in Figures 4 and

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14 — where the features of the young Augustus Caesar are distinguished by their neat comeliness. The profile of the young Patrician in Figure 15 presents us with an example of the classical "Roman nose", much mentioned in popular texts, but less frequently observed in actual busts. The busts of Emperor Servius Galba (Figure 16) and Marcus Agrippa illustrate the genetic similarity which characterizes the members of the older Patrician families, who not only sprang from common Italic origins, but intermarried with each other closely through the generations.

Comely beauty characterize the marble head of the young women represented in Figure 17, while all that survives of the bust of the Emperor Hadrian seems to combine the firm masculine features of this military leader with an essentially refined and elegant bone structure. Figure 19, from the early Empire, portrays a member of the Patrician classes who still looked much the same as the Patricians of the Republic, and indeed, only one or two generations separates him from that period.

Figures 20 and 21 again reveal people who are hardly distinguishable in physical character from the Roman showed in Figures 2, 4, 14 and 19. Antonius Pius in Figure 22 has the same sensitive, balanced features, and the bust portrayed in Figure 23 once again reveals a prominent 'Roman nose'. The girl in Figure 24 reflects the sensitivity of the girl in Figure 17, and the lady in Figure 25 (despite the elaborate coiffure reflecting a fashion of the Flavian period) could be the sister of almost any of the more finely featured of the Romans we have already portrayed. That the genetic continuity of the more ancient Roman families persisted into the 2nd century A.D. is illustrated by the priestess portrayed in Figure 26, who possesses a firmness of features that rendered her a true daughter of the noble family from which, as a priestess, she would inevitably have been drawn — one of the ancient families which had raised Rome to greatness. Even in old age, as we see in Figure 27, the finely-chiselled Roman features retain their beauty, because the underlying bone structure is unaffected by the ravages wrought by time on the fleshy parts of the face.

In *The Classical World* I also produce evidence of busts which reflect the increasing ethnic heterogeneity of the Roman population in the later days of the Empire, which was well recorded by the sculptors. But for this present article my goal is only to

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demonstrate the utility of antique busts in identifying the original Italic-Roman type, and its persistence into the first two centuries A.D., so that our display may be terminated at this point. The present summary is not exhaustive, by any means, and has only been attempted in order to invite attention to more serious research along these lines, involving close comparisons between the classical sculptor's art and the physical measurements of the skeletal remains which are available to us from this truly historic and romantic period.

* This article is based upon material appearing in the author's illustrated book entitled *The Classical World* (being Volume II in *The Atlas of Mankind* Series) dealing with the physical anthropology of ancient Greece and Rome (*The Classical World* by R. Peterson, Cliveden Press, Washington, D.C. 1895).

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BOOK REVIEW ARTICLE

THE RISING CRISIS IN MEDICAL ETHICS

THOMAS NURSE
Institute for the Study of Man

DOCTORS' DILEMMAS: Medical Ethics and Contemporary Science
Melanie Phillips and John Dawson
Methuen, New York

With the dramatic advance of medical technology, the question of medical ethics has assumed immense importance, and options have become available which were undreamed of earlier in this century. There has been a spate of books and scholarly papers on the subject, but *Doctors' Dilemmas* differs from some of these in that it embraces yet another set of complications – the responsibility of the doctor when his employer is not his patient but the state.

Authors Melanie Phillips and John Dawson, a team combining the talents of the medical and journalistic professions, have tackled all angles in *Doctors' Dilemmas: Medical Ethics and Contemporary Science*. They have summarized their subject with balance and clarity. After completing this book one is inclined to suggest that it might have been better subtitled *Medical Science and Contemporary Ethics*, because one realizes that the current ethics of our society simply do not measure up to the awesome responsibilities which are placed on the shoulders of the medical profession as a result of rapid advances in medical science. Contemporary law places the physician or surgeon at a very great disadvantage, presenting few clear guidelines but subjecting doctors to the possibility of severe penalties in regard to necessarily quick decisions made by them in urgent and pressing emergencies.

But *Doctors' Dilemmas* goes far beyond the arena of individual responsibility for medical decisions concerning life and death. It leads us directly to a reconsideration of the traditional Judaeo-Christian ethic regarding the sanctity of life and the privacy and freedom of individuals. The authors show us clearly that existing ethical and legal mechanisms are inadequate to deal with the dilemmas posed by modern medical technology. They show that a revision of prevailing ethical codes is neces-

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sary to provide clearcut guidelines for the medical profession; but they also explain why this is unlikely to occur. And even with revised professional and legal codes, how much discretion is to be left to the medical profession, since every case holds the potential for novel situations of the greatest ethical complexity? Indeed, how far can and should the medical profession be subjected to legal codes which can never be sufficiently updated to cover dilemmas arising from situations at the cutting edge of advances in medical technology?

As the authors state:

"There is an underlying conflict that links all medical dilemmas. Crudely put, it is the conflict between absolute principles, which say that something is inherently right or wrong, and utilitarian principles, which stress the consequences of an action . . . ."

They proceed to quote from Professor Richard Hare:

"For example, absolutists will say that because killing innocent people is always wrong, if you are in a situation in which if you do not kill one innocent person twenty other innocent people will die (though not by your hand) then you ought to be prepared to let the twenty die rather than become guilty of the death of one. But utilitarians will say that you have to act for the best in the circumstances, and save the twenty at the expense of one."

The variety of aspects from which the prevailing confusion in medical and social ethics can be perceived is almost endless. Abortion presents us with possibly one of the most difficult legal and philosophical problems: such as that of determining when life begins and whether life is sacred, and if a choice has to be made between the life of the foetus and the life of the mother, which life should be saved? And what about confidentiality; Traditionally our society has assumed that the patient has the 'right' to confidentiality, but in the case of infectious diseases does not society also have the right to be protected? Such protection also commonly depends on information. Euthanasia presents well known problems. Does the individual have the right to terminate his or her own life when it becomes intolerable, and do relatives have the right to make decisions for those who cannot decide for themselves? Are totally comatose patients to be kept alive with little or no hope of returning to consciousness, by extremely expensive equipment? If it is illegal

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to disconnect life sustaining equpment in such conditions, who is to pay for it? If we carry the 'right to life at all costs' theme to its logical extreme, then we could potentially reach a situation in which the healthy members of society were not only severely deprived by their ethical/legal need to support vast numbers of incompetent persons, but the needs of an increasing percentage of the latter category could conceivably extend beyond the ability of the healthy to support them, or force the healthy to decide against producing a new generation due to the economic burden of maintaining the diseased. In a sense, this is already happening in Western society. How, in such cases, would decisions be made? In early classical civilization the matter was simplified ethically. The head of each household, the *pater familias*, had the legal power of life and death over all the members of his family, including, as such families did, not only relatives but dependents of all kinds. His was the duty to decide whether the hereditarily defective new born child should live or die, or the extent of the resources to be devoted to the care of the chronically diseased. Since the medical alternatives were few, and the small community which he headed was a highly personal, strongly affective human group, his decisions generally reflected the views of that community, and consensus was usually easily determined. Today our communities are no longer so small and personal, the family has control of very few aspects of its own existence, and none over the lives of its members. The State has assumed the right to intervene in all affairs, presuming this right not only on the assumed basis of the good of society, but more recently on the shaky claim that the state must protect the 'rights' of the individuals over whom it claims authority. In socialized medical systems, such as the British National Insurance scheme or the American Medicare program, the state has also become the employer of the doctors in whose hands such issues of life and death reside, and as such it also claims that he who pays the piper calls the tune, effectively denying both the individual and his or her relatives the right to make decisions involving medical and personal ethics. Government now has to raise the funds to pay for the medical treatment of terminally ill patients. One British governmental report, which was leaked and heavily criticized in the media, suggested that tobacco smoking should not be discouraged since a substantial decline in the nation's smoking habits might make it difficult for the state to support the very

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large number of old age pensioners who would then live to claim support from the state health and pension services.

The degree to which socialism has accentuated the problem of medical ethics, by removing from the parents the right to make decisions on behalf of their minor children, was illustrated by an important British court case:

"Alexandra was a Down's Syndrome baby born with an intestinal blockage which would have killed her if it had not been operated upon. Her distressed parents decided it would be best not to operate but to let her die, since nature appeared to have 'made its own arrangements to terminate a life which could not be fruitful'. The doctors would not operate without their consent. The case was referred to the local social services department which applied to court to overturn the parents' decision, which the Court of Appeal eventually did, thus authorising the surgery to go ahead. The case was notable because it reaffirmed that parents are not entitled to choose death for their children . . ."

Another case involving the dreaded Down's Syndrome which made British legal history was that which involved the prosecution of a doctor for murder, because he withheld new medical technology from an infant whose mental capacity was hereditarily impaired and whose support would have been an unconscionable drain on the mental, emotional and financial resources of the parents, quite apart from the eugenic aspects, which were never taken into consideration at all, involving the possibility that the child might conceivably pass on its defects to another generation, thus perpetuating misery and suffering. In this case a jury, reflecting the current moral reaction of ordinary men and women, exonerated the physician after strict and professional interpretation of the law by a Judge had held him guilty of murder:

"The judgment of the Court of Appeal in the Alexandra case, which upheld the principle of the child's autonomy, appeared to conflict with the decision of the jury in the Arthur case, which appeared to uphold the antithetical principle of paternalism, or the doctor's right to decide on behalf of his patient . . . The facts of the case are these. Dr. Leonard Arthur, a senior consultant paediatrician at Derby City Hospital, was called in to examine a newly-born Down's Syndrome baby. The parents were very distressed, and Dr. Arthur made a note: "Parents do not wish it to survive. Nursing care only.' He pre-

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scribed a sedative drug, dihydrocodeine, to alleviate distress as and when it arose. Three days later the baby died, and the cause of death was given as bronchopneumonia due to consequences of Down's Syndrome. Dr. Arthur was then charged with murder, with the prosecution alleging that he had prescribed the sedative in order to kill the child and that the child had further been deprived of food and medical treatment so that it would die. The prosecution's case fell apart at the seams, however, when it was revealed that the baby had further defects in his heart, lungs and brain which could have been the cause of death. So the charge was changed to one of attempted murder, with the prosecution attempting to prove that even if he hadn't caused the baby's death, he had intended to do so. The defence maintained that, as the law and paediatric practice permit, Dr. Arthur had instead simply allowed nature to take its course. Dr. Arthur was acquitted."

Many doctors, who are seldom consulted by those anxious to lay down rules concerning the alleged sanctity of life, have placed themselves on record concerning the morality of allowing seriously defective patients to die in the course of nature, rather than to extend their lives meaninglessly with the aid of costly support system. Thus a paediatrician, Dr. Peter Dunn, has observed:

"Some children are born with such frightful handicaps that we think it is reasonable to accept the parents' decision that in the interest of their own child, prolonging, or long life is not in that interest. It is an extremely complex matter. No paediatrician takes life; but we accept that allowing babies to die — and I know the distinction is narrow but we all feel it tremendously profoundly — is in the baby's interest at times."

Once again, the problem we face with regard to so many painful decisions arises from the fact that the law in most Western countries now deprives relatives of the right to make fatal decisions, and places this on the shoulders of the medical profession, usually denying them the right to withold even the most hopeless life support systems. Where medical expenses are met by the relatives, this can be highly onerous and problematical, but in the case of socialist systems, the state, as the paymaster, is becoming more intimately involved.

As the authors comment, in the British National Health Service today:

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". . . the doctor no longer serves his primary master, the patient, to the exclusion of all other interests including his own, constrained only by the ethics of the noble cause which he also serves. Today he has two masters: the patient and the state, whose interests will often coincide but may also sometimes conflict."

As we move into the future, ethical absolutes are likely, at least in socialist systems, to be replaced by relative ethics, with the ultimate factor being the question of allocating such limited resources. Medical technology may offer many alternatives to virtually all patients, but resource allocation will eventually be the guiding factor to future codes of socialist medical ethics. Once the relatives cease to be the persons paying the bill, then the new managers of the financial spigot will be bureaucrats, detached from contact with the individual patient, who will be forced to draw up general guidelines in order to systematically allocate the limited resources available. This may remove some of the burden from the shoulders of the physician and the surgeon, but as the authors point out, bureaucratic rules and popular ethics will not be able to keep up with medical technology and doctors and surgeons will still find themselves confronted by evernew dilemmas, for which the law, however detailed, will fail to provide clear solutions.

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